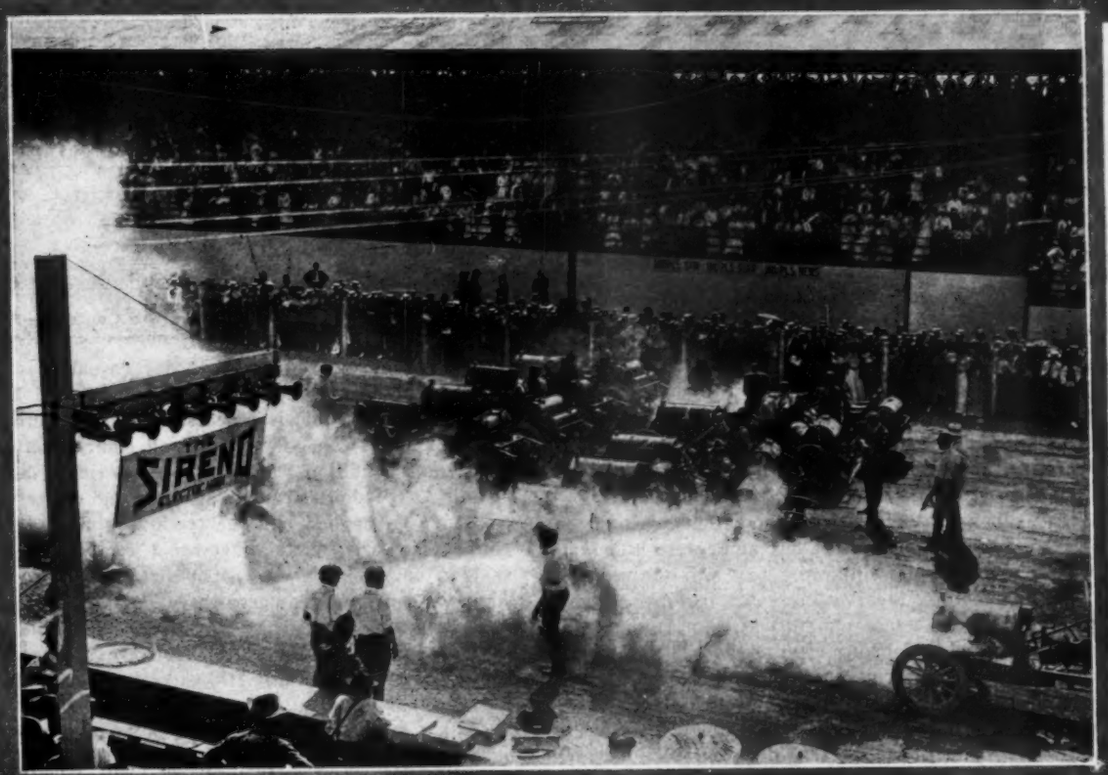
VOL. XXI NEW YORK—THURSDAY, AUGUST 26, 1909—CHICAGO No. 9

THE AUTOMOBILE

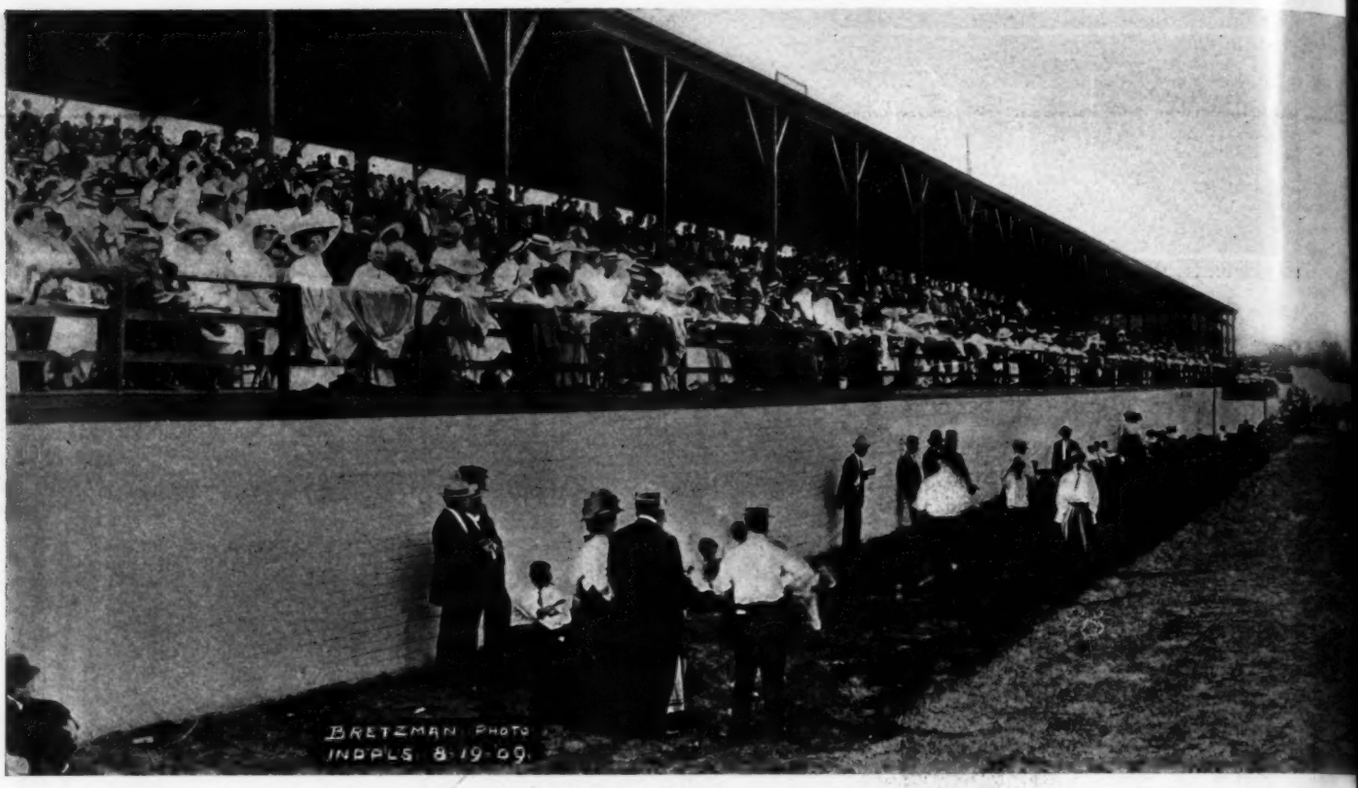
INDIANA SPEEDWAY PREMATURELY OPENED



WITH A DEPRESSING FATALITY LIST

INDIANAPOLIS, Aug. 23—The plain facts of the case are that the Indianapolis Motor Speedway was opened before completion—such completion as meant safety to those participating in the contests and safety to those who watched the racing. The management had entered into a double contract, one with the entrants and the other with the public, to open the speedway on August 19, 20, and 21. Only through almost superhuman exertion was it possible Thursday during the noon hour to start the first race and thus fulfill the announced obligations. There were the impatient drivers and the insistent spectators, the former ready to respond to the starter's pistol and the latter eagerly surging through the gates, anxious not to miss the opening event.

Certainly the drivers knew that the course had not received anywhere near its finishing touches, but while a few were questioning the advisability of competing, the greater number had no contrary thoughts and seemed unduly exercised in wanting the races to begin. Chances were numerous that accidents would punctuate the sport; and accidents marred the opening day in the form of a double fatality, Bourque and Holcomb of the Knox team being the sacrifices to the god of sport. Opinions are not in accord as to the exact cause of this catastrophe, but a ditch and a tile-strewn stretch of ground supplied conditions which added to the fearfulness of the happening. Some have it that Bourque must have been physically exhausted, for it is known that he had not been feeling over well. The distance of the race on such a course was too much for a single driver, unless endowed with extraordinary powers of endurance. Furthermore, as the race progressed, the surface of the track disintegrated and added to



The Crowded Grand Stand Attested the Interest Taken by the Public in the Contests—Finish of Friday's 8

the difficulties of the task. Built at high speed, the work could not be done with the thoroughness requisite to insure a reasonable degree of permanency in the track's surface.

Friday the thousands came again, and there was a feeling of decided relief when the sport concluded without any additions to the killed and injured list. Perhaps some were disappointed.

But Saturday supplied a distressing culmination, when in one accident mechanician Kellum and two spectators were killed, and another onlooker was seriously injured. This was the result of a right front tire puncture, Merz losing control of his National which dashed through the fence and turned over in the crowd near the bleachers stand. Not long after, Keene and a Marmon car met with disaster at the bridge opposite the bleachers, and it was then that Referee S. B. Stevens and President L. R. Speare of the A. A. A. decided that there had been enough for one day. Just before the announcement of this decision, the managers themselves, Messrs. Fisher, Newby, Wheeler, and Allison, had discussed and decided to ask the officials to stop the 300-mile race then in progress. At the time, the Jackson car piloted by Lynch led by over a lap, the Fiat handled by DePalma running second, with Stillman and a Marmon third.

With evident desire to leave the scene, the 25,000 spectators started homeward, some questioning the desirability of sport at the cost of human life, and others morbidly appreciating that they had seen something which they had feared might happen.

To-day there was a meeting of the directors of the speedway, when its future was carefully discussed. Taking all facts into consideration, it was decided that the track could be surrounded with safeguards, for drivers and public, which would permit a continuance of the racing, even if the expenditure totaled a hundred thousand dollars.

In commenting upon the situation, Carl G. Fisher, president of the speedway, said: "We feel there should be no more long events, longer than 100 miles, without new rules. In the first place we feel that drivers should be changed each 100 miles, as well as the tires, and we believe that drivers should be subjected to a physical examination. Loss of life must be prevented at all cost."

Merz, who survived the Saturday casualty, is quoted as not believing in limiting events to 100 miles. Said he:

"I do not think that it is necessary to limit future races to 100 miles. Drivers can go 300 miles all right, but the track should be in good condition. I had a bad experience, but I shall drive again. At the short stretches at either end of the track too much oil had been applied and the track was slippery near the pole. During the early part of the race I kept well in, but one lap I skidded dangerously, and after that I tried it near the outer edge. It was not so slippery there, but rather rough, and severe jolting, I think, caused my tire to explode. Then it was all up with me. Even the long stretches were far too rough; all the drivers complained of it. It was really a road race."

KNOX COMPANY IS APPRECIATIVE

SPRINGFIELD, MASS., Aug. 23—So many telegrams and letters of sympathy have been received by the Knox Automobile Company that its officials have found it necessary to acknowledge receipt of same by issuing a letter, the text of which is given herewith:

Knox Automobile Company,
Springfield, Mass., August 23, 1909.

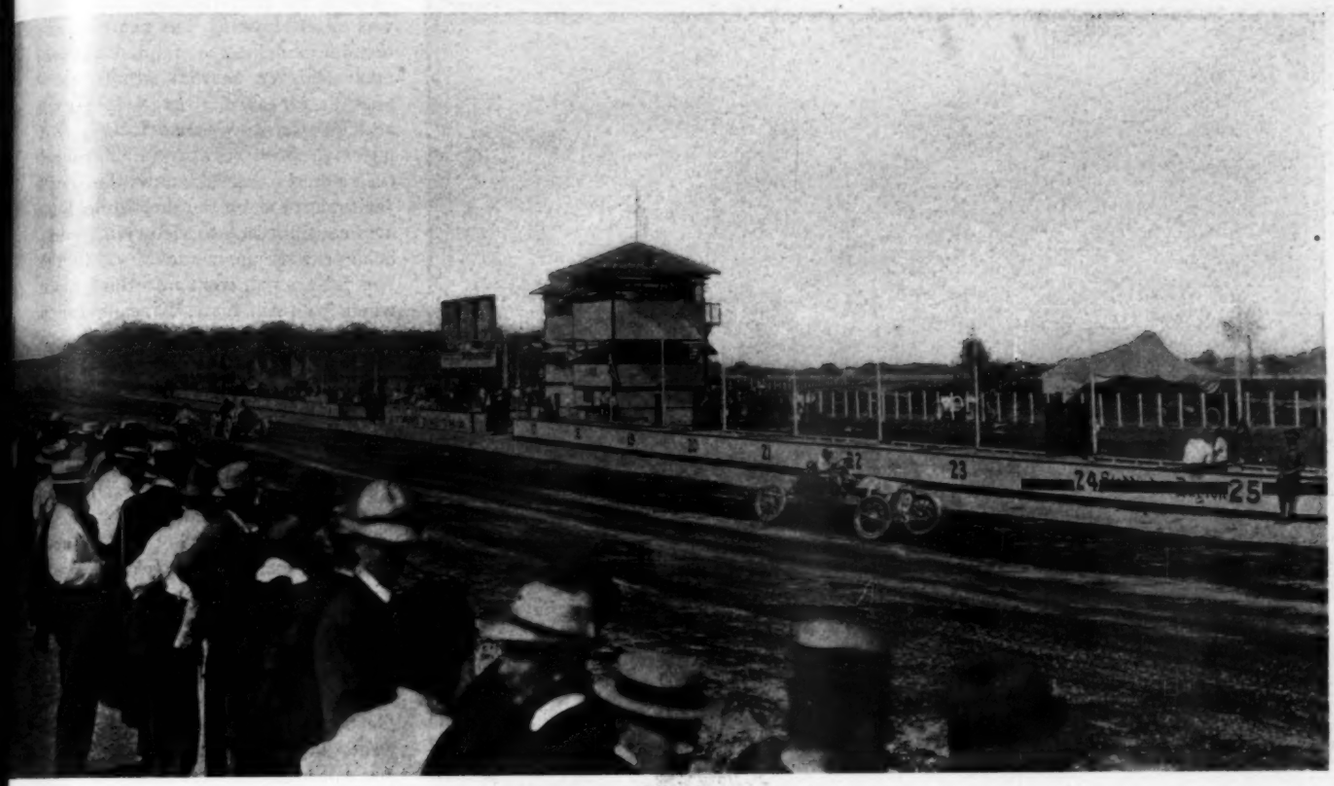
Agents, Customers, and Friends:—

We have received so many expressions of sympathy and inquiries as to the probable cause of the most deplorable accident at Indianapolis, August 19, sacrificing the lives of two of our most deservedly esteemed and trusted employees, we have delayed acknowledgment until we had been privileged with an opportunity to gather as many facts as possible from our own men who were present at the time the accident occurred, and while the exact cause will never be known, we are convinced after a careful consideration of all the particulars obtainable that Mr. Bourque's strength failed him and that he most probably lost consciousness and control of the car before it left the track.

He was not enjoying the best of health and the uncomfortable climate and track conditions demanded more than he had strength to give. He was faithful unto death and to the end enjoyed the support of a faithful helpmate.

All expressions of sympathy are fully appreciated and copies of same have been forwarded to the families of both Mr. Bourque and Mr. Holcomb.

Most respectfully yours,
KNOX AUTOMOBILE COMPANY.



Which Was Won by Stoddard-Daytons, Both First and Second Places Being Captured by These Cars

STORY OF THE FIRST DAY

INDIANAPOLIS, Aug. 19—A Stoddard-Dayton, driven by Schweitzer, achieved the honor of capturing the first race run on the Indianapolis speedway when it finished first this afternoon in a five-mile event for stripped chassis, in the 161-230 cubic inches class, which opened the initial card before a crowd of 15,000 people.

Five races had been carded, and every one produced fast time, although the condition of the track was none too good; in fact, the drivers complained so much about it that, following the accident which resulted in the death of Bourque and Holcombe, Referee Stevens ordered the promoters to improve the circuit before there could be another day of racing. Following this order, Director Moross prepared for a big gang of workmen laboring all night with the steam roller, and also ordered that the track be oiled at least half of its circumference because of the dust clouds raised by the flying wheels.

Prest-O-Lite Trophy Race the Feature

Of course the feature of the day was the 250-mile race for the Prest-O-Lite trophy, the cars being limited to a piston displacement of from 301 to 450 cubic inches, the field including the unfortunate Bourque in the Knox, Kincaid in the National six, and Merz in the National four; Strang, Chevrolet and Burman in Buicks; Miller and Clemens in Stoddard-Daytons, and Ellis in the Jackson.

Chevrolet led at the 10-mile post, and still had it 20 and 30 miles, Burman chasing him. In the fifteenth lap Burman forged to the front, and Chevrolet had to trail. At 50 miles Burman was but 11 seconds ahead of Chevrolet, while Kincaid was two minutes back of the leader, with Bourque, Ellis, Miller, Clemens and Strang following.

Strang was not a factor because of a sensational incident that occurred just as he was finishing his second lap. As he approached the pits it was discovered his car was afire and a hasty stop was made. A fire extinguisher was needed to put out the flames. Then Strang wanted to resume, but an objection was raised, it being claimed that he had received outside assistance in the shape of the fire extinguisher. Strang claimed, though, that as his mechanic had put out the fire there was no outside assistance. Finally, after considerable argument, he was allowed to resume under protest, it being understood the A. A. A. would thresh it out if he did anything.

Burman and Chevrolet had things their own way until the thirty-second lap, when Chevrolet dropped back, and Kincaid, Ellis and Merz passed him. Chevrolet, however, caught Merz. At 90 miles Strang had enough and retired. Passing the first century Burman had Ellis by more than five minutes. At 110 miles Chevrolet had worked back into second place, while Ellis had fallen to fifth place. No change in the order occurred until the fifty-third lap, when Chevrolet again lost his grip on second place and fell to fourth. Bourque began to look dangerous in the fifty-fourth lap, and at 140 miles was second, 28 seconds ahead of Kincaid. Burman at that time was five minutes to the good and going easy.

It was not long after—in the fifty-eighth lap—that the accident occurred which killed the Knox crew, and at the same time Chevrolet retired from the race. At 150 miles Burman was 11 minutes ahead of Kincaid, while Ellis was three minutes back of Merz. Ellis went to second place in the sixty-seventh lap, and at 175 miles he was some five minutes behind the leader, while Clemens had advanced to third. This order was maintained to the end of the eighty-first lap, and then the Jackson deposed the Buick having nearly 14 minutes' lead over Burman at 210 miles, and being 16 minutes 13 seconds to the good at 220 miles. Then came a sensational incident that put the Jackson completely out of the running.

Ellis had just passed the judges' stand, entering his eighty-ninth lap, when his engine stopped and his car coasted to the south pits, whereas, the Jackson box was in the north section. Ellis and his mechanic went to work with feverish energy to resume the race. Victory seemed certain with only 30 miles to go, if only the motor could be started. They cranked and cranked and didn't get a wheeze; then they discovered magneto trouble. But by this time the mechanic had collapsed and was

Where the Cars were Parked

The overflowing Grand Stand

As the Crowd Surged in.

Crossing the Track's Bridge

carried off the track by Ellis, who was all in himself. The exertion told on him, and he, too, fainted. Thereupon Referee Stevens granted permission for a relief crew to go on, and Tom Lynch undertook the job of piloting. But he also failed to get the engine started, and the dead Jackson stood by the pits while Burman continued on to victory, Clemens being runner-up, while Merz, in the No. 7 National, went into third place when his team mate, Kincaid, failed to get to the tape because of a broken gasoline feed on his last round.

Oldfield Benzed Mile Mark

Despite the roughness of the track, Barney Oldfield, in the Benz, set a mile mark that is likely to stand for some time, doing an exhibition in :43 1-10. Of course these figures have been excelled in road and beach trials, but it is the best ever made on a track in this country.

Wright and Schweitzer in Stoddard-Daytons, De Witt and Ryall in Buicks and Stickney in a Velie were the starters in the opener. Ryall went out the first lap and the Velie was not a contender. The three cars that did fight it out went at a good clip, the time of the winner being 5:13 2-10.

Poor "Billy" Bourque scored his last victory in the five-mile stripped chassis race for cars in the 301-450 class when he showed the way home to Clemens in a Stoddard-Dayton and Merz in the National, his time being 4:45 1-5. In this an attempt was made to use a flying start, but there was so much trouble in doing it this way that Starter Wagner went back to the standing start.

Harroun, of Chicago, driving a Marmon, won the 10-mile free-for-all handicap, in which a good field started. He had a 1:45 handicap.

STORY OF SECOND DAY

INDIANAPOLIS, Aug. 20—The G & J trophy at 100 miles and a 50-mile event furnished the attractions to-day, and six events were run off without accidents of any sort. Proceedings began at noon, and by 1 o'clock there were at least 20,000 spectators. By working all night the management had put the course in better shape than it was on the first day, the surface having been oiled half way around, while the work of the steam rollers was easily noticeable. Zengel in the Chadwick six clipped off 10 miles in 8:23 1-10 as against the 9:12 3-5 made by Oldfield in his Peerless Green Dragon as far back as 1904. Aitken in the National six ran 5 miles in 4:25 as against DePalma's

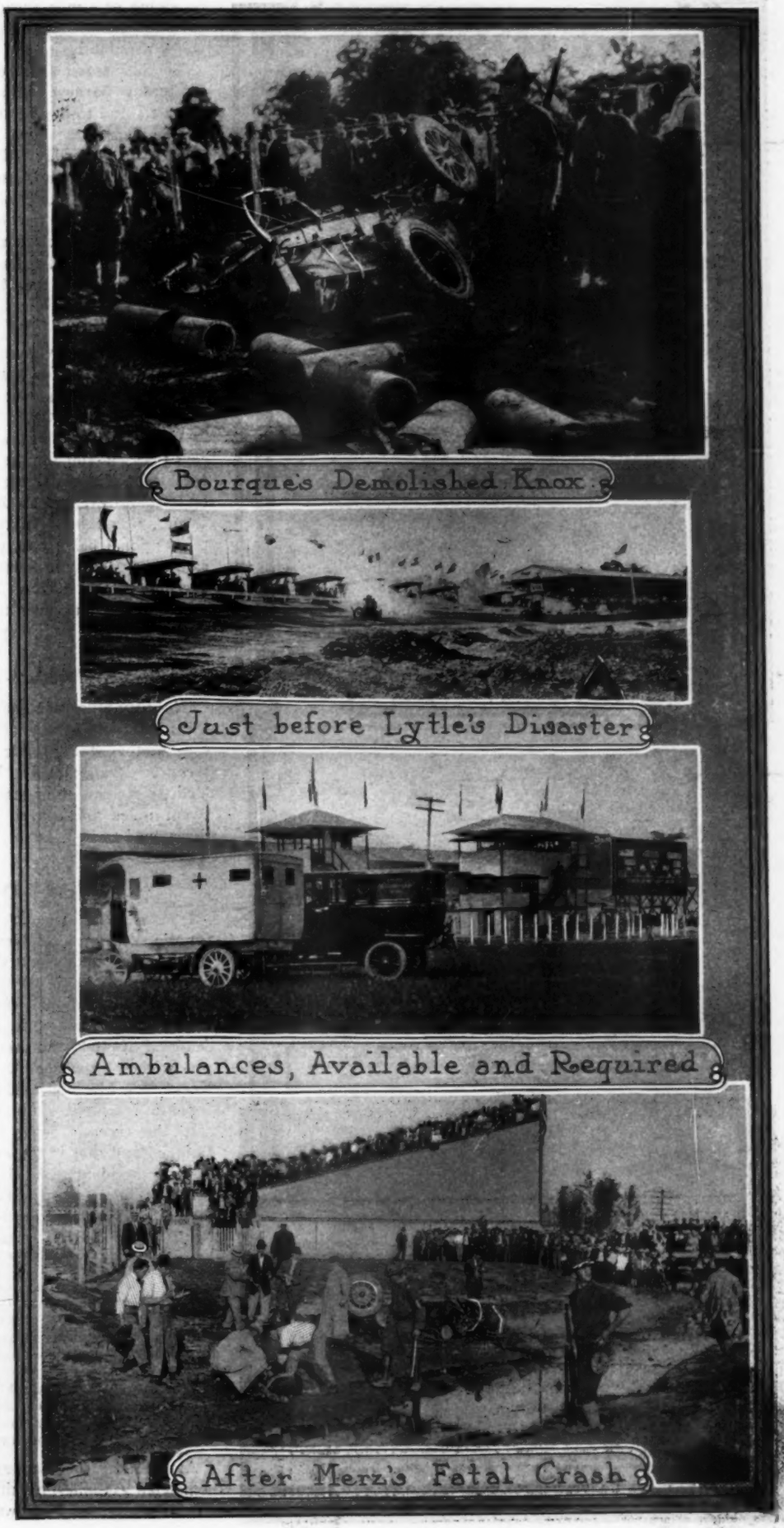
4:26 in a Fiat at Providence last year. Strang also participated in the feast, clipping the old marks in the G & J trophy race at 100 miles, the century being turned in 1:32:48 5-10.

The fight for the G & J trophy was the feature of the afternoon.' Some of the officials wished to cut the distance to 50 miles. Most of the contestants, however, lodged a strenuous objection. The grind resolved itself into a battle between the special Indiana trophy Buicks and the stock Marmons, the conditions limiting the field to cars of from 231 to 300 cubic inches piston displacement. As it turned out, Strang won and put up a new set of records, the feature of his race being the fact that he ran from start to finish without a stop either for repairs, supplies or to change tires. His time showed he had averaged 2:19 2/10 to the lap, a remarkably consistent performance. The runner-up was De Witt, also in a Buick, who was about 9 minutes back. Two others finished within hailing distance of the winner—Harroun in No. 15 Marmon, in 1:42:37 6/10, and Stillman, also in a Marmon. All three timed got inside the Burman record made at Columbus The Marmons ran consistently all the way through the century and are entitled to considerable credit for their work.

Chadwick Six Takes a Free-for-All

When the field lined up in the ten-mile free-for-all great things were expected, for Barney Oldfield had trotted out the big Benz for its first bit of competition work at Indianapolis. Opposed to him were Zengel in the Chadwick six, Aitken in the National six, Heina in a Lozier, de Palma in Hearne's stock Fiat and Cameron in a Stearns six. Oldfield set a merry clip for the first lap, and had a fine lead at that time. Then he was seen to slow, and in the back stretch the Chadwick went to the front, while the Benz dropped out. It later developed that Barney had met with an accident in the handicap preceding, in which he had driven his "Old Glory" National. He had had to stop in the backstretch, and while cranking the motor the hood came off and struck him on the arm, making a bad cut. This pained Barney, and in the big race he was greatly handicapped. Also a footboard on the Benz had loosened and got under the clutch pedal, so that Oldfield was in sad straits.

After Oldfield had been eliminated there was nothing to it but the Chadwick, which was let out to the limit. The distance of the race was soon covered, and Zenzel came home about



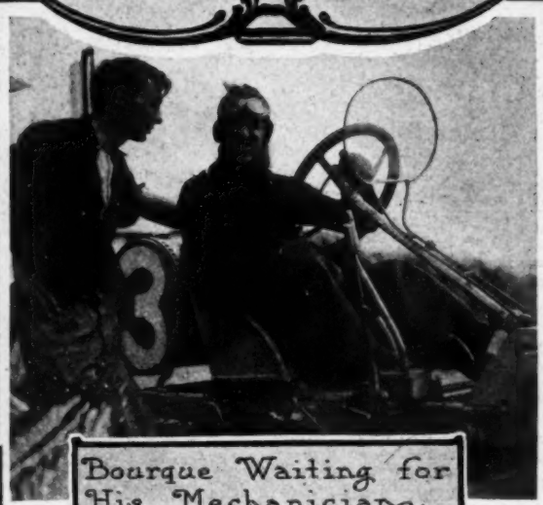
Bourque's Demolished Knox

Just before Lytle's Disaster

Ambulances, Available and Required

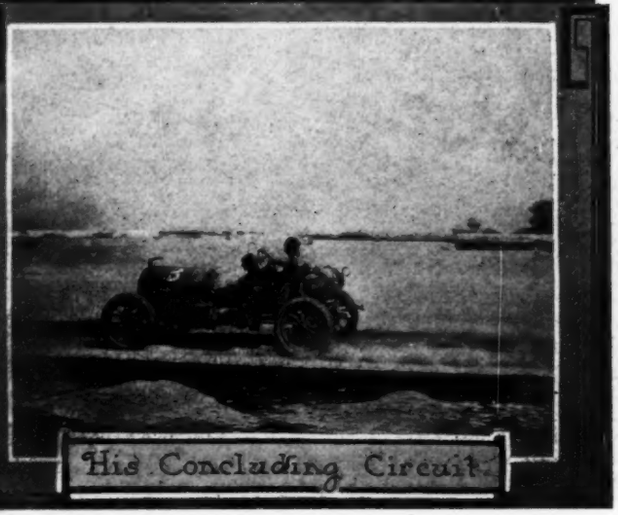
After Merz's Fatal Crash

INCIDENTS IN BOURQUE'S LAST RIDE



Bourque Waiting for His Mechanician.

The Final Change of Tires.



His Concluding Circuit.

an eighth of a mile ahead of Aitken in the National, having covered the ten miles in 8:23 2/10, which amply demonstrated the speed possibilities of the track.

Another speed feature of the afternoon was the mile trial. Yesterday Barney Oldfield, in the Benz, went an exhibition in :43 1/10, and to-day he drove against this mark. The consistency of the Benz was shown by the fact that Barney duplicated his figures of yesterday. Zengel also shot at the mark with the Chadwick, doing :49 3/10. De Palma, driving a stock Fiat and not his Cyclone, got a mark of :48 6/10.

The speed trials opened the afternoon's sport, and following came the 231-300 class race at five miles, in which Strang and Chevrolet, in Buicks, had everything to themselves, third place falling to Stutz in the Marion.

Aitken and National Were Star Pair

Aitken, in the National six, again came into prominence in the ten-mile race for 301-450 class of stripped chassis, in which the runner-up was Chevrolet, in a Buick. De Hymel, in a Stoddard, was third.

Aitken followed this with another victory in the ten-mile for cars that will run for the Wheeler & Schebler trophy to-morrow. In this he trimmed Lytle in an Apperson, having nearly 10 seconds the advantage as the tape was crossed, while Heina, in a Lozier, was third. In the five-mile handicap it was a case of the National being one, two, Aitken in his six getting the decision over Merz, the finish being so close that some disputed the decision of the judges. It probably was one of the most hair-splitting decisions ever turned out at a motor meet, the timers deciding there was only 1/200 ofa second between the two Nationals.

Stoddard-Dayton Ran One-Two

The fifty-mile race shared honors with the century as one of the attractions of the afternoon, and it resolved itself into an easy victory for Stoddard-Dayton, which took both first and second. Ryall and De Witt, in Buicks, and Stickney, in the Velie, were the other starters. The Stoddards were in front at twent miles and stayed there, although De Witt at one time threatened to be a factor, only to fade away.

STORY OF THE THIRD DAY

INDIANAPOLIS, Aug. 21—Just when prospects looked brightest for the successful completion of the meet, two accidents brought racing to a sudden end this afternoon and prevented a winner being evolved in the Wheeler & Schebler cup race at 300 miles. Merz, in the National, ran off the bank near the bleachers, and the accident resulted in the killing of two spectators and the death of Kellum, the accompanying mechanic. Before the horror-stricken crowd had time to recover from the effects of this, Keene in a Marmon skidded and hit a pole. His mechanic suffered a fractured skull, and thereupon the officials decided to stop the race, it being evident that the drivers were greatly fatigued and that if the event went the full distance there might be more accidents. At the time the race was stopped, 235 miles, the Jackson was in the lead and seemed to have a good hold on first place. But Referee Stevens would not give it the race, and in the evening, after a consultation with his fellow officials, he issued the following statement:

Owing to the physical condition of the contestants who had been subjected to the strain of a three-day race meet under trying climatic conditions, I deemed it to the best interests of the entrants and spectators to abandon the race, therefore I rule no race and no awards. In conclusion, however, I recommend to the management of the Indianapolis Motor Speedway and to the donors of the trophy that suitably engraved certificates of performance be presented all contestants in active participation in this event at the time of its abandonment, and that they be signed by the management of the speedway, the donors, and the referee.

At the time the race was stopped Lynch in the Jackson had completed 235 miles, his time for that distance being 4:13:51 4-10. De Palma in the Fiat, was second, and Stillman in the plucky

Strang Disguised
"Wag" Instructs Barney
Christie Interested
Lynch, The Jacksonite
Rounding the Turn
Marmons consult Stillman
Bourque and Holcomb

Time-Keepers Baker and Warner
F. H. Wheeler
One Contestant and Some Officials
A. G. Candler, Jr., and E. M. Durant of Atlanta.
Busy Moross
The Gold-Plated Overland
Referee Stevens
A. L. Baker, C. W. Kelsey, Mr. and Mrs. H. E. Coffin
Technicist Beecroft

First Lap of the 300-Mile Race for the Valuable Motor Speedway Trophy

little Marmon third. Harroun in a Marmon, and De Hymel in a Stoddard, were also running—five out of eighteen starters.

The race itself was replete with sensational incidents. At the very start Johnny Aitken in the National six jumped out and beat it. He soon had a good lead over his fellows, with Lytle in the Apperson being closest. The half-century showed Aitken more than three minutes to the good.

Lytle Figured in the First Accident

The first scare of the afternoon came in the twenty-fourth lap when Lytle escaped a serious accident by his skillful driving. He had just passed the pits when a steering arm broke and left Lytle almost helpless. The car made a wild dive for the fence, but Lytle with control only over one front wheel managed to pull it away and run up the bank. He had slowed by this time and from the top of the bank he slowly drifted to the pole, just escaping being hit by one of the cars following him. When the bottom was reached the Apperson struck a pile of dirt, the mechanic was thrown clear and Lytle stepped out unhurt. The car had been moving so slowly that no damage was done. Lytle went to work and repaired the damage and resumed when the race had reached 175 miles. He was so far behind, though, that he hadn't a chance in the world of doing anything.

Following the Apperson incident Aitken continued to burn it

250-MILE RACE FOR THE PREST-O-LITE TROPHY, VALUE $1,000—301 TO 450 CUB. IN. PISTON DISPL.—AUGUST 19

No.	CAR	Driver	Bore	Stroke	10 M.	50 M.	75 M.	100 M.	150 M.	200 M.	250 M.
35	Buick	Burman	4	4½ x 5	9:40	47:05	1:10:24	4	2:27:32	3:24:13	4:38:57 4-10
61	Stoddard-Dayton	Clemens	4	4¾ x 5	8	8	9	8	5	3:52:04	4:46:01 8-10
7	National	Merz	4	5 x 5 11-16	6	6	6	1:38:11	4	5	4:57:07 1-10
6	National	Kincaid	6	5 x 5 11-16	4	48:05	1:10:49	5	2:36:30	4	Didn't cross line
21	Stoddard-Dayton	Miller	4	4¾ x 5	5	7	7	7	6	6	
53	Jackson	Ellis	4	4¾ x 4¾	9:52	5	5	1:37:31	2:39:53	3:28:47	
3	Knox	Bourque	4	5 x 4¾	7	4	4	6			
37	Buick	Chevrolet	4	4½ x 5	9:23	46:54	1:09:47	1:32:18			
36	Buick	Strang	4	4½ x 5	9	9	8				

100-MILE RACE FOR THE G. & J. TROPHY, VALUE $1,000—231 TO 300 CUB. IN. PISTON DISPL.—AUGUST 20

No.	CAR	Driver	Cyl.	Bore and Stroke	10 M.	25 M.	50 M.	75 M.	100 M.
33	Buick	Strang	4	4 23-64 x 5	9:75	23:20	46:04	1:09:37	1:32:40.8
32	Buick	DeWitt	4	4 23-64 x 5	10:21	24:52	48:55	1:17:21	1:41:32.3
15	Marmon	Harroun	4	4½ x 4½	4	5	4	3	1:42:37.6
16	Marmon	Stillman	4	4½ x 4½	10:21	4	52:30	4	4
34	Buick	Chevrolet	4		5	3			
12	Marion	Monson			6 D. O.				

300-MILE RACE FOR THE WHEELER-SCHEBLER TROPHY—UP TO 600 CUB. IN. DISPL.—AUGUST 21

No.	CAR	Driver	Cyl.	25 M.	50 M.	75 M.	100 M.	125 M.	150 M.	175M.	200 M.	225 M.	235 M.
52	Jackson	Lynch	4	10	8	8	7	4	2:39:34	3:05:16	3:32:28	4:03:54	4:13:31.4
24	Fiat	De Palma	4	7	5	1:13:11	1:36:19	3	2:46:14	3:09:35	2	4:05:23	
75	Marmon	Keene	..	18	12	9	9	6	2:46:38	3:20:46	3		
58	Marmon	Harroun	4	16	13	12	11	10	6	6	5		
17	Marmon	Stillman	4	13	11	10	10	8	5	5	4		
9	National	Oldfield	6	15	15	13	13	9	7	8			
62	Stoddard-Dayton	De Hymel	4	6	7	6	6	5	10	9			
23	Stoddard-Dayton	Miller	4	11	10	11	7	7	4	4			
10	National	Merz	4	5	4	4	4	2	8	7			
53	Jackson	Ellis	4	19	17	14	14	12	9				
35	Buick	Burman	4	4	47:49	1:11:54	1:35:50	1					
22	Stoddard-Dayton	Clements	4	8	6	7	8	11					
1	Apperson	Lytle	4	3	47:4	16	..	13					
37	Buick	Chevrolet	4	9	9	5	5						
8	National	Aitken	6	21:27	44:22	1:09:34	1:31:41						
55	Marion	Stutz	4	17	16	15							
76	American	Drach	4	14	14								
36	Buick	Strang	4	2									
2	Apperson	McCulla	4	12									

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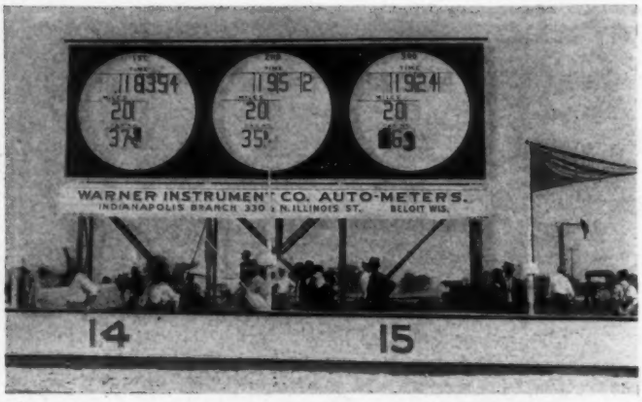
7	National	Merz	4	5 x 5 11-16	6	6	6	1:38:11	4	5	4:57:07 1-10
6	National	Kincaid	6	5 x 5 11-16	4	48:05	1:10:49	5	2:36:30	4	Didn't cross line
21	Stoddard-Dayton	Miller	4	4¾ x 5	5	7	7	7	6	6	
53	Jackson	Ellis	4	4¾ x 4¾	9:52	5	5	1:37:31	2:39:53	3:28:47	
3	Knox	Bourque	4	5 x 4¾	7	4	4	6			
37	Buick	Chevrolet	4	4½ x 5	9:23	46:54	1:09:47	1:32:18			
36	Buick	Strang	4	4½ x 5	9	9	8				

100-MILE RACE FOR THE G. & J. TROPHY, VALUE $1,000—231 TO 300 CUB. IN. PISTON DISPL.—AUGUST 20

No.	CAR	Driver	Cyl.	Bore and Stroke	10 M.	25 M.	50 M.	75 M.	100 M.
33	Buick	Strang	4	4 23-64 x 5	9:75	23:20	46:04	1:09:37	1:32:40.8
32	Buick	DeWitt	4	4 23-64 x 5	10:21	24:52	48:55	1:17:21	1:41:32.3
15	Marmon	Harroun	4	4½ x 4½	4	5	4	3	1:42:37.6
16	Marmon	Stillman	4	4½ x 4½	10:21	4	52:30	4	4
34	Buick	Chevrolet	4		5	3			
12	Marion	Monson			6 D. O.				

300-MILE RACE FOR THE WHEELER-SCHEBLER TROPHY—UP TO 600 CUB. IN. DISPL.—AUGUST 21

No.	CAR	Driver	Cyl.	25 M.	50 M.	75 M.	100 M.	125 M.	150 M.	175M.	200 M.	225 M.	235 M.
52	Jackson	Lynch	4	10	8	8	7	4	2:39:34	3:05:16	3:32:28	4:03:54	4:13:31.4
24	Fiat	De Palma	4	7	5	1:13:11	1:36:19	3	2:46:14	3:09:35	2	4:05:23	
75	Marmon	Keene	..	18	12	9	9	6	2:46:38	3:20:46	3		
58	Marmon	Harroun	4	16	13	12	11	10	6	6	5		
17	Marmon	Stillman	4	13	11	10	10	8	5	5	4		
9	National	Oldfield	6	15	15	13	13	9	7	8			
62	Stoddard-Dayton	De Hymel	4	6	7	6	6	5	10	9			
23	Stoddard-Dayton	Miller	4	11	10	11	7	7	4	4			
10	National	Merz	4	5	4	4	4	2	8	7			
53	Jackson	Ellis	4	19	17	14	14	12	9				
35	Buick	Burman	4	4	47:49	1:11:54	1:35:50	1					
22	Stoddard-Dayton	Clements	4	8	6	7	8	11					
1	Apperson	Lytle	4	3	47:4	16	..	13					
37	Buick	Chevrolet	4	9	9	5	5						
8	National	Aitken	6	21:27	44:22	1:09:34	1:31:41						
55	Marion	Stutz	4	17	16	15							
76	American	Drach	4	14	14								
36	Buick	Strang	4	2									
2	Apperson	McCulla	4	12									



Warner Scoreboard Recorded the Leaders' Positions

The Teams Used in Construction Numbered Hundreds

Workmen Hurriedly Giving Way to the Racing Craft

Along Automobile Row, Which Proved a Big Success

and had turned the century with a new record to his credit. The National was running so well that even at this early point it seemed as if Aitken's name would be the first engraved on the $10,000 trophy. But in the very next lap a cracked cylinder developed and Aitken had to quit, leaving an opening for Burman to become the leader. The Buick star went to the front and showed first at 125 miles, but soon after he went down and out, leaving the field to Lynch in the Jackson, De Palma in the Fiat, and Stillman in the Marmon.

How Kellum Ran to His Death

Merz in the National four still was in the running and for a few laps after his team mate had quit he had been in front. Trouble overtook him though when he had to stop in the back stretch. He stopped his engine and when he tried to start it again he discovered his storage battery was dead. He and his mechanic, Lyne, were too tired to start on the magneto and so Lyne was dispatched across the infield for a new battery. It was a long run, nearly a mile, and Lyne arrived at the pit in an exhausted condition, collapsing when he reached there, whereupon Kellum was delegated to take his place. Kellum had been mechanic for Aitken until the six had been forced out, but he cheerfully picked up the battery and ran across the field with it, going to his death, as it afterward turned out.

Merz started to recover lost ground and was making good progress. He had passed the double century mark and had swung into the first turn. He had got half way around the bend and was nearing the bleachers when a front right tire punctured. The National shot up the bank and over the edge just where the bridge abutment is located. It posed for a second on the brink, then toppled over, striking a fence on which sat a row of spectators. It was a danger point and there was a huge sign there warning people to keep away, and it is stated that the police had driven them off several times. The crash of the car killed two outright, Ora Joliffe of Trafalgar, Ind., and an unknown man. Kellum was so badly injured that he died soon after. Merz, though, had a lucky escape. He was caught under the car when it turned over but was not hurt, retaining presence of mind enough to turn off the power before he crawled out.

Only three other races were run and there was an attack on the kilometer record which resulted in Oldfield in the Benz going the 5-8 of a mile in :26 2-10. Christie did :28 7-10, and Zengel in the Chadwick :29 9-10.

Oldfield Won the Remy Brassard

A remarkably fast race was run for the Remy brassard, which has been put up by the magneto manufacturer and which carries with it a salary of $75 a week as long as it is held. Oldfield went after the money and got it, leaving behind him a trail of new records. He finished the quarter-century in 21:21 7-10, the Fiat being second in 22:44 4-10, and the Chadwick third in 23:07 8-10.

THURSDAY, AUGUST 19

5 MILES, STRIPPED CHASSIS, 161-230 CU. IN. PISTON DISPL.

No.	Car and Driver	Cyl.	B. and S.	Pos.
19	Stoddard-Dayton, Schweitzer	4	3 7-8 x 4 1-2	1
18	Stoddard-Dayton, Wright	4	3 7-8 x 4 1-2	2
30	Buick, DeWitt	4	3 1-4 x 3 1-4	3
49	Velie, Stickney	4	4 x 4	4
31	Buick, Ryall	4	3 1-4 x 3 1-4	d. o.

Time of winner, 5:13 1-4.

10 MILES, STRIPPED CHASSIS, 231-300 CU. IN. PISTON DISPL.

34	Buick, Chevrolet	4	4 23-64 x 5	1
33	Buick, Strang	4	4 23-64 x 5	2
32	Buick, Burman	4	4 23-64 x 5	3
15	Marmon, Stillman	4	4 1-2 x 4 1-2	
16	Marmon, Harroun	4	4 1-2 x 4 1-2	
14	Marion, Stutz	4	4 1-2 x 4 1-2	

Time of winner, 8:56 4-50.

5 MILES, STRIPPED CHASSIS, 301-450 CU. IN. PISTON DISPL.

3	Knox, Bourque	4	5 x 4 3-4	1
35	Buick, Burman	4	4 1-2 x 5	2
37	Buick, Chevrolet	4	4 1-2 x 5	3
36	Buick, Strang	4	4 1-2 x 5	4
21	Stoddard-Dayton, Miller	4	4 3-4 x 5	5
52	Jackson, Lynch	4	4 3-4 x 4 3-4	6
53	Jackson, Ellis	4	4 3-4 x 4 3-4	7

Time of winner, 4:45 1-10.

10 MILES, FREE-FOR-ALL, HANDICAP

15	Marmon, Harroun	4	4 1-2 x 4 1-2	1:45	1
51	Jackson, Lynch	4	4 x 4	1:45	2
8	National, Aitkin	6	5 x 5	:20	3

Time of winner, 8:22 1-10.

FRIDAY, AUGUST 20

5 MILES, STRIPPED CHASSIS, 231-300 CU. IN. PISTON DISPL.

No.	Car and Driver	Cyl.	B. and S.	Pos.
33	Buick, Strang	4	4 23-64 x 5	1
34	Buick, Chevrolet	4	4 23-64 x 5	2
14	Marion, Stutz	4	4 1-2 x 4 1-2	3

Time: No. 33, 4:45; No. 34, 4:55 4-10; No. 14, 6:31 4-10.

10 MILES, STRIPPED CHASSIS, 301-450 CU. IN. PISTON DISPL.

7	National, Merz	4	5 x 5 11-16	1
37	Buick, Chevrolet	4	4 1-2 x 5	2
20	Stoddard-Dayton, DeHymel	4	4 3-4 x 5	3

Times: Five miles—No. 7, 4:48 2-10; No. 37, 4:58; No. 20, 4:59 4-10. Ten miles—No. 7, 9:16 3-10; No. 37, 9:44 4-10; No. 20, 10:23 5-10.

TRIALS AT ONE MILE RECORD

		Time
27	Benz, Oldfield	:43 1-10
54	Fiat, De Palma	:48 6-10
50	Chadwick, Vengel	:49 3-10
26	Christie, Christie	Not taken

10 MILES FOR WHEELER & SCHEBLER CUP CARS

No.	Car and Driver	Cyl.	B. and S.	Pos.
8	National, Aitken	6	5 x 5	1
1	Apperson, Lytle	4	5 3-4 x 5	2
5	Lozier, Heina	4	5 3-4 x 5 1-4	3
6	National, Kincaid	4	5 x 5 11-16	4

Times: Five miles—No. 6, 4:48 1-10; No. 24, 4:49 4-10; No. 1, 4:55 7-10. Ten miles—No. 8, 9:26 6-10; No. 1, 9:36 2-10; No. 5, 9:42 8-10.

10 MILES, FREE-FOR-ALL

50	Chadwick, Zengel	6		1
8	National, Aitken	6	5 x 5	2
66	Stearns, Cameron	6	5 3-8 x 5 3-8	3
5	Lozier, Heina	4	5 3-4 x 5 1-4	4
24	Fiat, De Palma	4		
27	Benz, Oldfield			

Times: Five miles—No. 50, 4:17 4-10; No. 8, 4:21 1-10; No. 5, 4:28 1-10. Ten miles—No. 50, 8:23 2-10; No. 8, 8:32 6-10.

50 MILES, STRIPPED CHASSIS, 161-230 CU. IN. PISTON DISPL.

No.	Car and Driver	Cyl.	B. and S.	Time
16	Stoddard-Dayton, Bright	4	3 7-8 x 4 1-2	59:23 1-10
19	Stoddard-Dayton, Schwitzer	4	3 7-8 x 4 1-2	1:00:26 7-10
31	Buick, Ryall	4	3 1-4 x 3 1-4	
30	Buick, DeWitt	4	3 1-4 x 3 1-4	
49	Velie, Stickney	4	4 x 4	

5 MILES, FREE-FOR-ALL, HANDICAP

No.	Car and Driver	Cyl.	B. and S.	Pos.
8	National, Aitken	6	5 x 5	1
7	National, Merz	4	5 x 5 11-16	2
22	Stoddard-Dayton, Miller	4	5 1-4 x 5 3-4	3

Handicap: No. 8, 10 seconds; No. 7, 20 seconds; No. 22, 30 seconds. Time: Nos. 8 and 7, 4:25; No. 22, 4:30 1-2.

SATURDAY, AUGUST 21

15 MILES, FREE-FOR-ALL, HANDICAP

No.	Car and Driver	Cyl.	B. and S.	Pos.
6	National, Kincaid	4	5 x 5 11-16	1
23	Fiat, De Palma	4		2
17	Marmon, Stillman	4	5 x 5	3
30	Buick, DeWitt	4	4 1-2 x 5	4

Handicaps: No. 6, 1:15; No. 24, scratch; No. 17, 1:00; No. 30, 2:15. Time of winner, 14:23 5-10.

10 MILES, AMATEUR CHAMPIONSHIP

24	Fiat, Hearne	4	1
47	Buick, Ryall	4	2
29	Thomas, Greiner	6	
66	Stearns, Cameron	6	

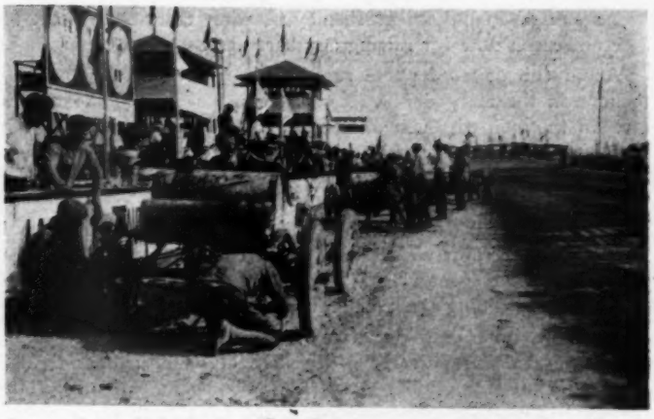
Time: No. 24, 9:44 3-10; No. 47, 9:49 3-10.

25 MILES, FREE-FOR-ALL, REMY BRASSARD

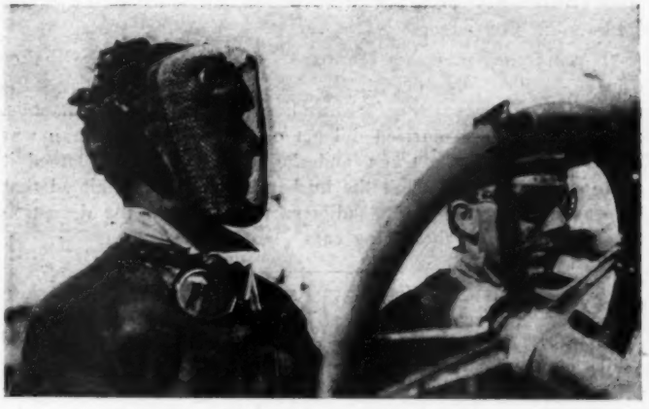
No.	Car and Driver	Cyl.	B. and S.	Time
37	Benz, Oldfield	4	6 1-10 x 8	21:21 7-10
24	Chadwick, Zengel	4	5 x 6	22:44 4-10
50	Fiat, De Palma	4	5 1-2 x 5 1-8	23:07 8-10

HEARD AND HAPPENED AT INDIANAPOLIS

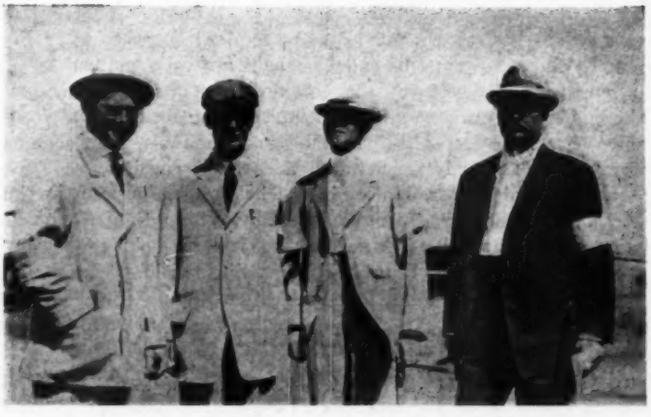
President L. R. Speare, of the American Automobile Association tried his best to have the three hundred mile race at Indianapolis cut down to 100 miles, and then tried to compromise on two hundred. Mr. Speare watched the race with dread, and finally, after the second accident, immediately counseled stopping it. Asked whether the accidents would result in any action on the part of the A. A. A., he said: "The accidents were



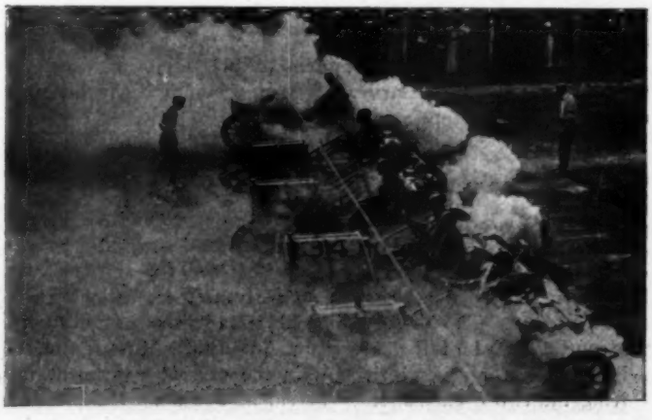
In Front of the Pits There Was Action



Merz, the National Driver, Winner and Loser



Speedway Four: Fisher, Allison, Newby, Wheeler



Start of G & J Trophy Race Which Strang Won

the result of conditions which may be corrected, and will be. I see no reason now for raising any bars against future contests.

As in the days of cycle racing, the public has grown to believe in the man as much as in the machine, and the cheers are for the men with whom, through past performances, they are acquainted. In the grand stands at events will be heard: "What do you know about that. Barney has just let that fellow go by him. Why don't he hurry up. Barney is not a quitter." These and similar remarks show plainly the feeling of the people and add zest to the sport which was not there in the early days when the feeling was general that it was the machine and not the man that was doing the racing.

"Go out, boys, and do your best to win, but without taking chances," said Mr. Wright of Springfield when Dennison and Bourque left for Indianapolis. "Remember," continued Mr. Wright, "you boys are very dear to us here, and we want no wins at the sacrifice of safety. We merely want you to drive within the safety limit, but finish the contest." Dennison promised, as did Bourque.

"No married men need apply," is the verdict of one maker of automobiles who oftentimes dabs in speed contests. This maker issued the edict before sending his team to Indianapolis, and by a chance a married did get on the team. The man was killed, but not at the track, and the wife, of course, blamed it all to the maker, although the husband had always claimed that he was not married and steadily carried through the deception to gain a place on the racing cars.

BOURQUE WAS TO HAVE BEEN MARRIED

SPRINGFIELD, MASS., Aug. 22—Wilfred Bourque, who was killed while competing in the automobile races at Indianapolis last Thursday, was to have been married September 14 to Miss Alexina Boivin, of West Springfield, and two of their friends, Prosper Dufresne and Miss Eugenie Parent, had planned to make the wedding a double ceremony. Bourque's fiancée was opposed to his racing, and he had promised her that after the Vanderbilt cup event this fall he would not race another car.

Over 300 employees of the Knox Automobile Company met the bodies of Bourque and Harry Holcomb on their arrival from the West and escorted them to their homes. Fully 5,000 persons were at the railroad station when the train arrived.

The funeral of Mr. Holcomb was held this afternoon in the Methodist Church in Granville, the Rev. Philip L. Frick officiating. The funeral of Mr. Bourque will be held to-morrow morning at St. Louis' Church in West Springfield.

STODDARD-DAYTON OUT OF RACING

DAYTON, O., Aug. 24—Charles G. Stoddard, vice-president of the Dayton Motor Car Company, announced to-day that the local company would never again enter in a racing event. The Dayton concern conducted a large excursion to the recent meet at Indianapolis, when 1,800 residents of this city saw the races and accidents which marred the sport.

Mr. Stoddard says automobile races not only cause men to risk their lives unnecessarily, but that the motor car business is damaged every time a man is hurt.

MEETING OF M. C. A. RULES COMMITTEE

INDIANAPOLIS, Aug. 21—The general rules committee of the Manufacturers' Contest Association has held several sessions during the speedway races, and definite plans for another year have been decided upon, though no announcement will be made for the present. The M. C. A., through its advisory committee to the contest board of the American Automobile Association, is going to ask for several changes in the present agreement involving the two organizations. President Benjamin Briscoe and Chairman H. E. Coffin of the rules committee, presided at the meetings, which were well attended.

POSSIBILITY OF 1909 VANDERBILT RACE

H. E. Coffin, chairman of the general rules committee of the M. C. A., has notified the prominent makers of the country that a race for the Vanderbilt cup will be held if a sufficient number of entries to insure the success of the event are pledged on or before September 1. The mails and telegraph are being used in a thorough canvass of the situation. If the makers guarantee the required number of entries the race will be conducted by a new association, formed pursuant to the A. A. A.-A. C. A. peace agreement, which will assume the custody of both the Vanderbilt and the Grand Prize cups.

The actual incorporation of this holding body will take place when the Vanderbilt race of this year is assured. In its membership are automobilists of national reputation.

By a change in the deed of gift the Vanderbilt trophy will become one for stock-car competition, under rules recommended by the Manufacturers' Contest Association, as follows:

1. The Vanderbilt cup race shall be open to cars of classes 1 and 2 of division B, under the classifications of the A.A.A. racing rules for 1909.
2. A cup will be offered for class 3 and another for class 4 under the same division, to be raced for at the same time and on the same course, but at shorter distances.

These classes call for competition under piston displacement, and were recommended as providing a possible race for existing stock cars, as the time was realized to be too short for the building of any new cars for this special event.

The race will be held over the portion of the parkway used in 1908, with probably the same Nassau County roads. A request has been made, however, that the course be shortened, and engineers looking into the matter have found this to be possible. If the short course is finally decided upon, it will probably be about four miles less than that of 1908.

All preliminary details regarding the race have been quietly perfected, and now the situation is up to the makers. If held, the race will take place the latter part of October.

METROPOLIS MAY HAVE A MOTORDROME

NEW YORK, Aug. 24—New York may have an automobile track within a few minutes of the great business district. The proposed location of the course is on the meadows just outside of Jersey City, where the McAdoo tunnels will reach the spot. For some time these meadows have been filled, and a vast area is now ready for factory sites or anything desired. The immense attendance at automobile events all over the country attracted the attention of the McAdoo interests and P. S. Parish and W. M. Jacobus, accompanied by A. A. Alexanded, made a flying trip to Indianapolis. The great crowds and the evident interest, created a most favorable impression, and the trio made a thorough inspection of the track and grounds before leaving. It is said that the venture will tie up two and one-half million dollars.

TEN ENTRIES FOR NEXT BRIGHTON "24"

NEW YORK, Aug. 24—Entries for the 24-hour race, which will be held on Friday and Saturday, on the Brighton Beach track, closed to-day with ten nominees. Eight of these are of American production, one is from Italy and one is from France. The track has been much improved since the last contest and records are expected to be broken. Harlan W. Whipple has been chosen referee. The entrants are as follows:

No.	Car	Drivers
1	Renault	Basle and Raffalovitch
2	Palmer and Singer	Howard and Lescault
3	Acme	Patschke and Van Tine
4	Acme	Dearborn, other not announced
5	Lozier	Cobe and Heina
6	Stearns	Mulford and Laurent
7	Houpt	Robertson and Poole
8	Allen Kingston	Hughes and Lawwell
9	Fiat	DePalma and Parker
10	Rainier	Disbrow and Lund

The entries for the six-hour race for smaller cars, and those for the short distance events, close to-morrow.

Paulham in Voisin Biplane

Arrival of Curtiss Aeroplane in France

Tissandier in the Wright Biplane

CURTISS OPENS RHEIMS TOURNAMENT WITH RECORD

RHEIMS, Aug. 23—Glenn H. Curtiss, the lone American representative at the International Aviation Week, at present holds the record of the course, and is the favorite for the Gordon Bennett race next Saturday. He covered the 61-5 miles of the circuit in 8:35 3-5, at the rate of 43.3 miles an hour.

Practice for the meet began in earnest last Thursday, and that day saw a most spectacular exhibit of aeronautic skill. For the first time in history three aeroplanes were in the air at the same time. They were Dumanest's Antoinette monoplane, Tissandier's Wright biplane and Curtiss' machine. All were flying rapidly about the field, when suddenly Curtiss saw Dumanest about to cross his course at right angles and on the same level. A collision seemed imminent, but Curtiss easily guided his machine upward and soared over the Frenchman.

A driving rainstorm swept over the field Saturday, and on Sunday, the first day of the meet, the sky remained cloudy and the wind erratic until shortly before dark. Then there was a great rush to the sheds. Latham was first away, and others quickly followed; soon the spectators beheld six aeroplanes in flight at the same time. Latham completed two rounds, Lambert four, and Lefebvre and Tissandier, the other Wright pilots, three each. The work of Lefebvre, who is self-taught, is one of the sensations of the meet; he made the fastest lap of the day, in 8:55 4-5. Curtiss did not appear, as he has but the one machine and cannot afford to risk an accident.

In contrast to yesterday, blue skies, sunshine and only a trace of wind made ideal conditions for the aviators to-day. Most of the day was taken up by flights to qualify for the Prix de la Champagne, which has an aggregate of prize money of $20,000. In these trials Lefebvre, Bleriot, Sommer, Latham, Tissandier, Farman, Lambert, Delagrange, Gobron, Bunau-Varilla, Cockburn and Sanchis-Pesa made flights of from 200 meters to 25 kilometers. Paulham on his Voisin biplane was the only aviator to make a real distance trial. He made two beautiful flights at a very high altitude of 49.5 and 56 kilometers, respectively. Curtiss was the last to appear. The time limit for the trials had almost expired, and the Americans had abandoned hope of seeing him take the field when his machine appeared. After a preliminary run along the ground of 100 yards it rose easily and shot by the stands at a height of sixty feet. He made the last turn under the impression that the finish line was closer, and descended so close to the earth that many thought he touched. However, he discovered his mistake in time, rose quickly and crossed the line. Soon after it was announced that he had established the record of 8:35 3-5 for the 10-kilometer circuit.

David Lloyd-George, the British Chancellor of the Exchequer, is much interested in the Curtiss machine. Although Hart O. Berg, the manager of the Wright company, was in constant attendance on him, the Curtiss shed was the only one which the Chancellor favored with a second visit.

Americans here generally regret the news that the Wrights are suing Curtiss for infringement on their patents. Curtiss himself expressed much surprise. Cortlandt Field Bishop, the president of the Herring-Curtiss company, maintains that the Wright claim of a basic patent is unfounded, and that Curtiss does not infringe on the warping wing principle, which is the distinctive Wright feature.

The judges have selected MM. Bleriot, Lefebvre and Latham as the French team for the Gordon Bennett race.

The aviators at present on the field include MM. Paulham, Fournier, Ferber, Gobron, Rougier and Bunau-Varilla, flying Voisin biplanes; MM. Lefebvre, Tissandier, Lambert, Gasnier and Schreck, with Wright biplanes; MM. Latham, Dumanest and Burgeat, with Antoinette monoplanes; MM. Sommer and Farman and Mr. Cockburn, with Farman biplanes; MM. Bleriot and Delagrange, with Bleriot monoplanes; MM. Pelterie and Geoffroy, with R. E. P. monoplanes; MM. Sanchis-Pesa and Fernandez of the Spanish team, and M. Santos-Dumont and Mr. Curtiss on machines of their own construction.

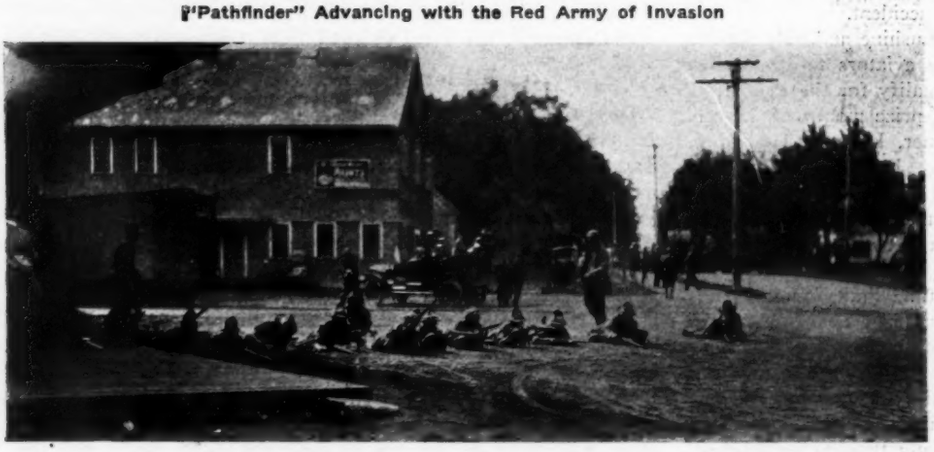
Bleriot Breaks Curtiss' Record

RHEIMS, Aug. 24—Louis Bleriot to-day broke Curtiss' record for the 10-kilometer course by covering the distance in 8:04 2-5, which is at the rate of about 47 miles an hour. The most sensational performance of the day, however, was a 30-kilometer flight by Paulham, part of the time at an elevation of 500 feet. A 20-mile breeze was blowing, and the aeroplane rocked dangerously. As he swept down from this great height at the finish many of the spectators thought he was falling, and cries of horror went up. But he righted himself easily only twenty feet from the ground, and crossed the line on an even keel. The flight was made for the especial benefit of President Fallieres, who came from Paris to witness the meet. Latham also made three rounds at good speed. Lefebvre, the Wright pilot, was fined $4 for his recklessness on Sunday; but the management added its congratulations.

Neither Fighting Nor Touring Is Much Fun in a Pouring Rain

General Leonard Wood (Leaning on Left Front Lamp) and His Staff

"Pathfinder" Advancing with the Red Army of Invasion



Squad of the Seventh Regiment, New York, Awaiting the Enemy

How The Auto Played Its Part

IT is seldom that the tourist has such splendid opportunities for seeing new and interesting scenes as were presented last week in Plymouth County, Mass. Not since the days of King Philip and his Narragansett warriors has there been so much excitement in the region. The Red army, consisting of detachments of the National Guard of New York, New Jersey, Connecticut and the District of Columbia, had effected a landing at New Bedford, with the announced purpose of marching northward and capturing Boston. The National Guard of Massachusetts, designated the Blue army, had been called into the field to check the advance o fthe invaders. The terrain over which the contending forces were scattered was not less than 30 miles square. Obviously, the only possible way of covering this wide stretch of country and of seeing what was happening was by automobile. This opinion, which had brought me to the scene in my White steamer in the capacity of interested observer, was also held in high official circles, for when I made an inspection of the different camps, I found that there were no less than six automobiles of the same make as my own in official service. Most prominent of these users of the motor car was General Leonard Wood, Commander of the Department of the East, who acted as chief umpire and had supervision over the maneuvers. At the conclusion, General Wood said that he had traveled an average of 150 miles a day, and that it was only through the use of the automobile that he had been able to keep fully in touch with what was going on. This is surely a significant statement coming from the officer who is the ranking general of the United States Army. I remember that at the military maneuvers in Pennsylvania, three years ago, General Fred D. Grant declined to ride in an automobile on the ground that it was not dignified for one of his position to travel about the camp except on horseback.

No less than five White steamers formed a part of the military equipment of the Blue army. Three of these cars were attached to the head-

In Mimic Warfare About Boston

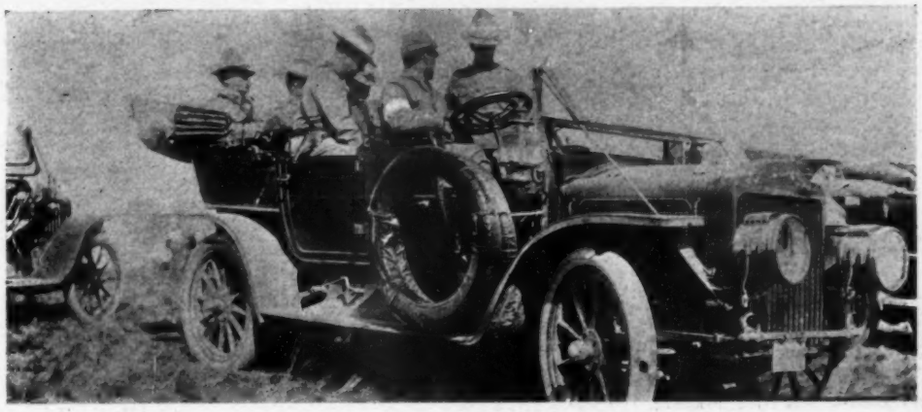
By Pathfinder

quarters of Brigadier-General Pew, Commander of the Blue army, and were used by him and his staff almost continuously in carrying orders to his widely scattered forces. There is no doubt that, had it not been for these cars, General Pew would have made a less effective defence of Boston than he did, for his troops were spread out in a thin line from the seacoast to the Taunton River. During the first two or three days all of the camps were in touch with General Pew's headquarters by means of telephone wires rigged by the Signal Corps, but in the later days the Blue army did not have any time for such operations, and General Pew relied entirely upon his White steamers to keep in touch with his scattered forces, for, be it remembered, the rules of the game created the fiction that all ordinary means of transportation and communication were destroyed and the armies were thrown entirely upon their own resources.

Quite as much appreciated by the Blue army was the White steamer ambulance, attached to the division headquarters, and there was no "make-believe" about the work of this car. Although no bullets were flying about to bring injuries to the contending armies, the hospital corps on each side was kept busy, treating cases of heat prostration and the ordinary ailments to which flesh is heir. In the Blue army of 7,000 men, such cases manifested themselves very frequently, and it is not surprising that it was found necessary to have two chauffeurs for the automobile ambulance, as it was in practically constant service. The driving of this ambulance was by no means confined to the public roads. On more than one occasion I saw it making its way through the fields to reach the side of some citizen-soldier who had collapsed from sheer exhaustion while maneuvering with his company.

The above does not completely catalog the extent to which steamers were used by the Blue army. Quartermaster-Sergeant Hathaway drove his steamer, using kerosene as fuel, and, as he was in charge of getting supplies to the division headquarters, it can be readily imagined how useful this car proved itself to be.

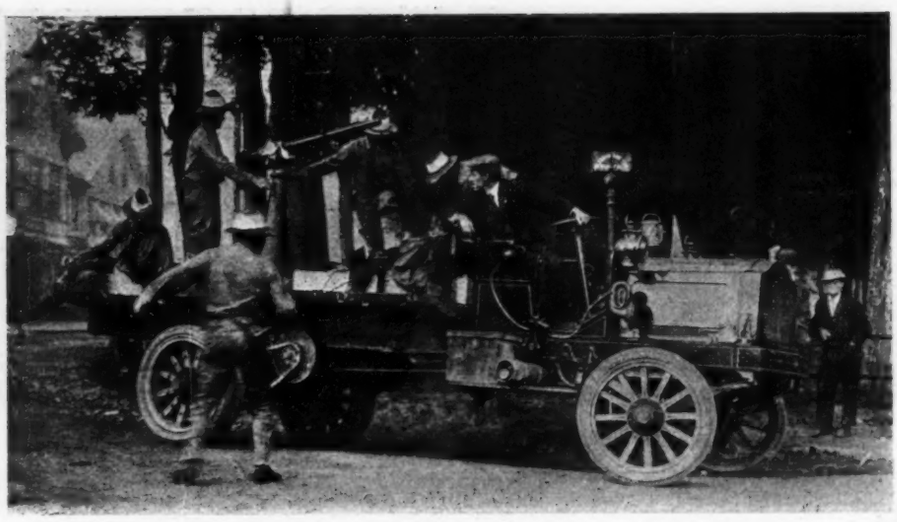
Company of Blue Soldiers in Front of Church Where They Spent the Night



General Pew (In Right-Hand Rear Seat) and Staff in His White Steamer

Bicycle Scouts of the Red Army That Rendered Effective Service

Bringing a Wounded Trooper in the Ambulance to the Field Hospital



Packard Truck Successfully Employed in Massachusetts War Maneuvers

One point which was especially made manifest was the feasibility with which a regiment on a forced march could be transported with the aid of a number of motor trucks. A car like the Packard, with a carrying capacity of 40 men with guns and haversacks, could cover in two hours the ground that it would take infantry a whole day to get over. If, in such cases, 30 trucks were available, a whole regiment of infantry and its baggage could be transported between 50 and 75 miles in a single day.

Probably 50 or 60 officers of the regular army were present at the maneuvers, serving in the capacity of umpires, observers, or as advisers to the respective armies, and the work of these automobiles was thus brought forcibly to the attention of some of the most active officers on the roster of the War Department.

Never have I passed a more interesting week in an automobile than when observing the movements of the two armies. By the rules of the game, the fighting and forward movements of the contesting forces were restricted to the hours between 5 o'clock in the morning and 1 o'clock in the afternoon. We chose as our headquarters for the week the quaint old King Philip Tavern, located about 20 miles north of New Bedford, on the shores of the Assawompsett Pond. This hotel was also the headquarters of a number of the regular army officers serving as observers, and the atmosphere pervading the place was decidedly military. Each morning we arose at daybreak and took on board five or six army officers, and were at the scene of action by 5 o'clock. We moved unmolested through both the Blue and the Red lines, and were therefore able to see all the fine points of the game. Occasionally, we would find the roads so blocked with troops and army wagons that advance was impossible, in which case we would detour and get on the nearest parallel road and in this way reach the head of the column. In making some of these detours I took my car through some swampy, sandy roads which would do credit to Southern Georgia. I should say here that in traversing the highways and byways of what was to me an entirely new country, and in keeping posted on the movements of the two armies, I depended entirely upon a set of Pilot road maps of New England and found them accurate to the last degree and absolutely invaluable.

Major-General Bliss, the head of the War College at Washington, was in command of the Red army, and Brigadier-General Pew, of the Massachusetts Militia, led the Blue army of defence. Perhaps it will not be out of place for me to give a brief summary of the maneuvers, because no one, unless riding in an automobile, could gain any comprehensive idea of what was going on. The first position of the Blue army was in an east-and-west line extending from Taunton to the coast. On Monday, General Bliss made such a disposition of his army as to indicate that he intended to attack the right flank of the Blues. Immediately, General Pew started to concentrate his troops on his right. This move on General Bliss' part, however was only a feint, and on Tuesday he sudden shifted his troops and, by forced marches moved against the weakened left flank of the Blue army, which, at the close of the day, he had effectually penetrated. It was a case of the entire Red army massed against a single regiment of the Blues, and there was nothing for the umpires to do but to declare the regiment of Blues annihilated.

Thereafter the advantage was always with the invaders. Their army was concentrated, while the Blue army was spread out. There was incessant fighting at every crossroad, but the northward march of the Reds never halted. A battalion or regiment of Reds would deploy into each crossroad and would engage the attention of whatever Blue troops were in the vicinity, while the main Red army continued their march. When the main body had passed the crossroad, the skirmishers would be drawn in and would continue for the time being as the rearguard of the Red army.

Riding now with the advance guard of the Red army, now in their rear with the skirmishers, and then again visiting the detachments of the Blues, we had a comprehensive view of the movements of both sides, just as though we were seated comfortably in a grand stand watching a football game. Indeed, the analogy between the war game, as we saw it at close range, and a football contest, is a very close one. The Reds, we will say, had the ball and the Blues were spread out protecting equally all parts of their line. The action begins and the Reds mass themselves as if to go around the right end of the Blues. Immediately, the Blue defence rush to that side, when the Reds, changing the direction of their attack, actually get the ball around the left end of the Blues. Thereafter, it is a run for the goal. The Blues, recovering from their surprise, try to head off the runner, who corresponds with the main advance of the invaders; but all they can do is to come up on his flank, where they are held in check by the "interference," corresponding with the skirmishers, which the Red army sent into every crossroad. But before the goal is reached, time is called, just as it was in the maneuvers. The Red players have almost a clear path to the goal, although they are much harassed on the side and from the rear, just as General Bliss had an open road to Boston but found his left flank under constantly increasing attack. The expiration of the allotted time keeps the Red players from scoring, just as the Red army could not accomplish their announced purpose of camping on Boston Common. To the Blue players belong the credit of having fought so valiantly as to seriously delay operations, just as the Blue army in Massachusetts, theoretically, saved Boston from capture by their gallant recovery from their initial mistake in maneuvering.

As in all warfare since time began, the cavalry were of much greater effectiveness than the infantry, simply because they could cover a greater amount of country in a given time, than the unmounted men. Could not a motor corps be even more useful than cavalry for the same reason, namely, because of the greater territory they could cover? There was no time during the maneuvers when a motor corps of, say, 300 men, carried in 50 cars, could not have caused the utmost confusion in the ranks of either side by capturing the supply trains, cutting communications and defeating detachments sent out on scouting duty. This is not simply a layman's opinion, but is concurred in by all the officers of the regular army with whom I discussed the proposition.

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Practices in Water-Cooling

Chapter III

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In certain classes of work square-tube radiators are used, and the tubes are about 5-16 x 5-16 inches square, measuring outside, with the walls about 0.008 inches thick. These tubes are made of copper, and the length of the tubes, which measures the depth of the radiator, ranges between three and six inches, depending somewhat upon the power of the motor, which variable is dictated by the nearly constant front area of the cars, without respect to power of the motor used in them.

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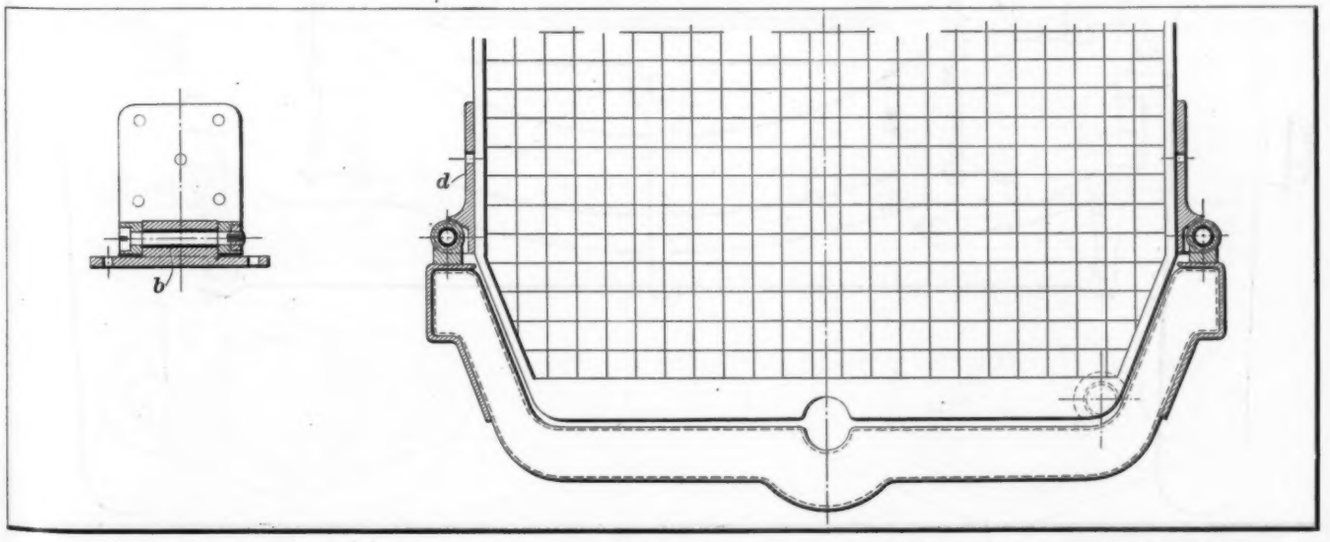
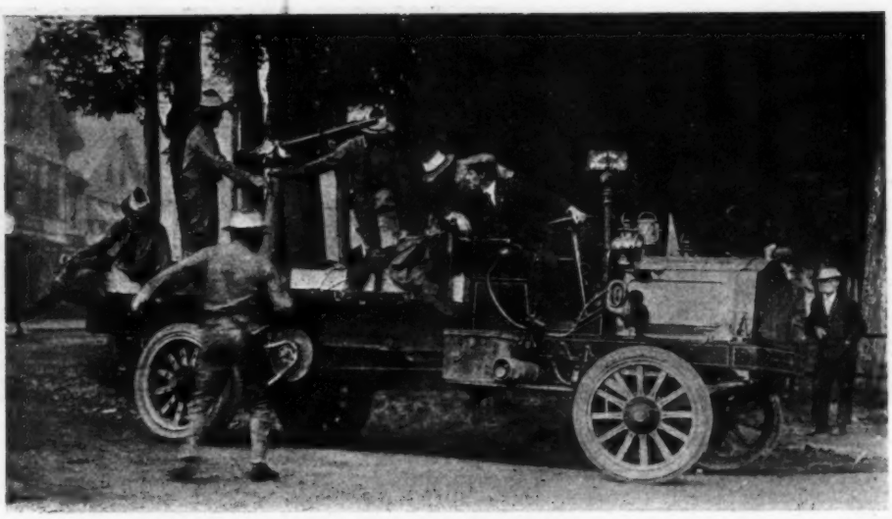


Fig. 8—A method of securing radiators, using the principle which prevents straining by avoiding rigid fastenings



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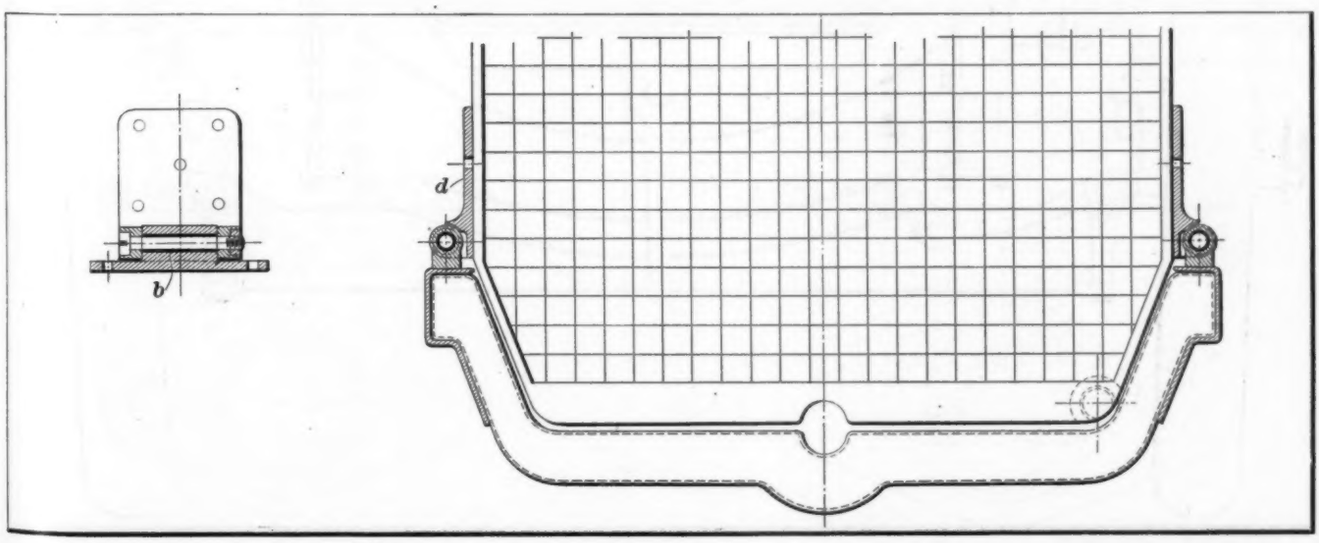


Fig. 8—A method of securing radiators, using the principle which prevents straining by avoiding rigid fastenings

air through the radiator tubes should be about 20 miles per hour (about 30 feet per second) for the best results and fans are frequently designed to displace enough air to render the velocity of the same about 30 feet per second when the motor is making about 400 revolutions per minute.

With square tubes of the size and character as above referred to it takes about 225 square inches of surface, over which the air must brush at the rate of 30 feet per second to keep the water from reaching the boiling point, considering each horsepower actually delivered by the motor. True, there are numerous conditions which will tend to reduce this requirement. The above estimate is for a radiator in which the square tubes are 5 inches long, and as the tubes are shortened within certain limits, the area of surface over which the air traverses may be reduced, but the front area will have to be increased accordingly.

To some extent the amount of radiator surface will change with the size of the motor, it being the case that the escape of heat to the radiator through the water is in direct proportion to the internal surface of the cylinders, measuring all the surface that is brushed by the heated products of combustion, assuming that water is in contact with the external surface. This statement is on the assumption that the temperature of the flame is substantially constant in the several motors and that the temperature of the water in the jacket will be the same in each case, thus indicating a constant difference in temperature; should there be a difference in these particulars, an adjustment will have to be made to suit. Differences in compression, or if the fuel differs from gasoline, will demand special treatment.

If round or other shapes of tubes are used instead of square the surface should be the same, or nearly so, and the ratio of water (thickness of the sheet) to air section in the tubes should be on the same basis. This is assuming the tubes are in the horizontal plane, as given in front elevation in Fig. 8, whereas, if the tubes are vertical, the effective area will have to be determined, which effective area may not be equal to the exposed surface of the tubes, since if the air strikes against one face of a tube it will glide around the same and is prone to glide away without contacting with the surface opposite the contact surface. Radiators made up of flattened (thin) sheets, presenting but a thin edge at the contact, at the front, and with both sides for a considerable distance (perhaps 4 inches) brushed by the

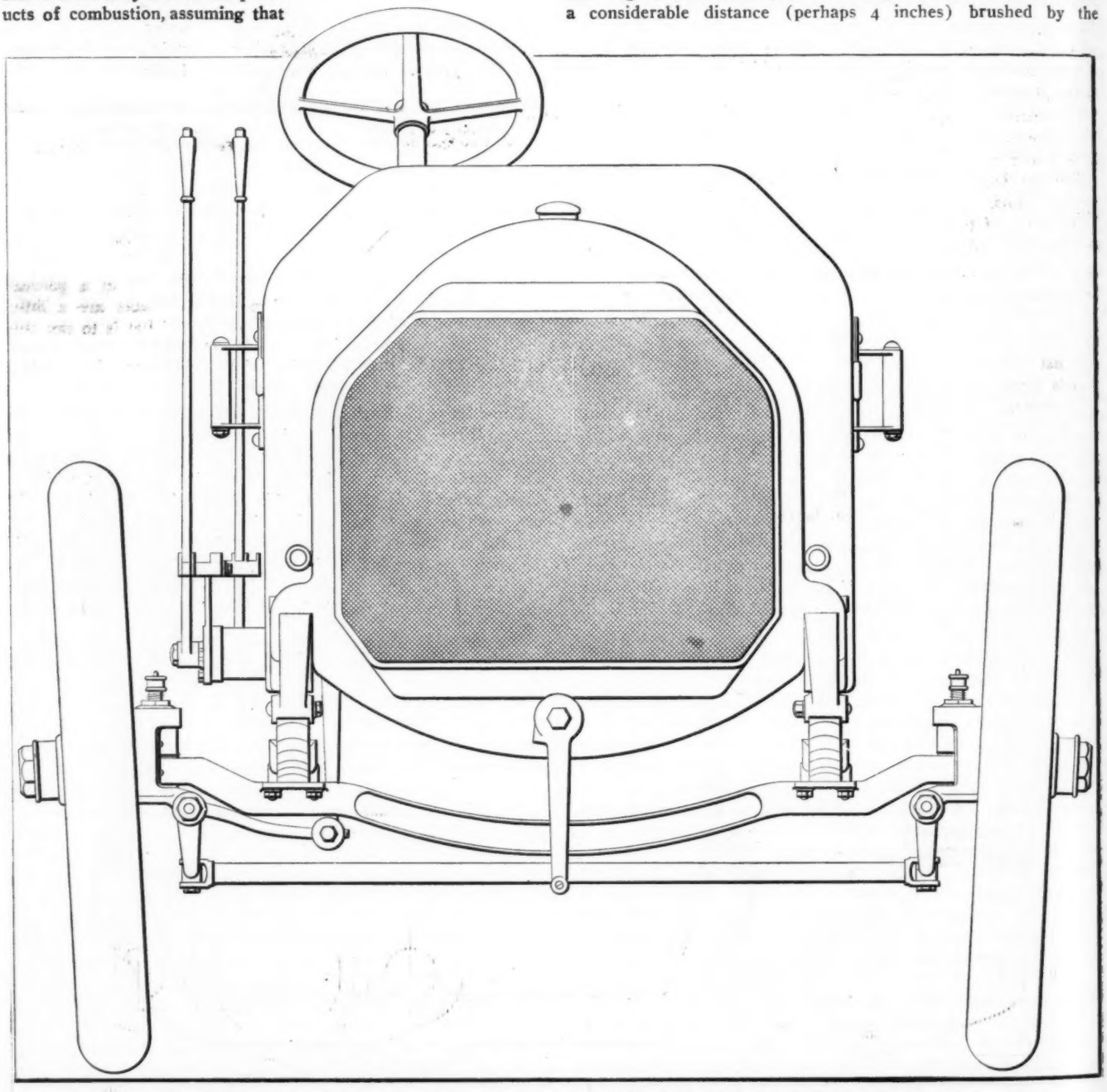


Fig. 9—Front view of a Moore car, showing how the radiator influences the appearance of the car.

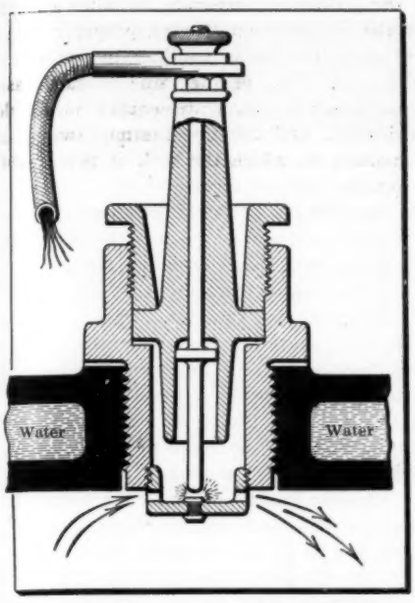


Fig. 10—Section of a cylinder showing water jacketing around the spark plug

current of air are probably quite as efficient as tubes in the horizontal plane, with air passing through the tubes, as in the honeycomb types of radiators.

Centrifugal Types of Water Pumps Are Mostly Used — In this type of pump the height of lift of water will depend upon the tangental force, and not upon the tightness against the housing of the vanes of the wheel. On this account centrifugal pumps can be made of aluminum for the housing, which is light and strong enough to withstand the pressure, but the wheel should be made of a good grade of phosphor bronze. In these pumps, as usually designed, the suction takes place at one side, around the axis of rotation, as shown in Fig. 15, which is a section of a conventional form of centrifugal pump as used in this service, and the suction pipe is made of liberal area, very short, and free from air leaks. The vanes are not fashioned for the highest efficiency, but they are easy to turn up, on centers, in a lathe, which is a matter to be considered.

In this type of pump the quantity of water discharged will be dictated by the area of the discharge pipe, and the head against which the pump will work, within certain limits, depends upon the peripheral velocity. Under the circumstances it is necessary to gear the pump as high as the crankshaft speed as a minimum, and in general practice it is frequently found that the pump shaft rotates considerably higher than the speed of the crankshaft. Considering the lowest speed at which it may be desired to run a motor at which the velocity of the centrifugal pump should be that in view of the diameter of the pump-wheel, which will afford a peripheral velocity of 500 feet per minute as a minimum value.

If the pump is relatively inefficient and speeded to a sufficiently high point to assure that an adequate supply of water will circulate at the lowest speed at which it is desired to run the motor, the troubles of excess water at the higher speeds will be aborted to some extent at any rate. It must be remembered that the head, against which the pump will lift, is as the square of the velocity, and since the most water is really wanted when a motor is running slow, under a retarded spark, centrifugal types of pumps have the fault of lifting the maximum just when it is least in demand.

In centrifugal pumps there may be any number of arms within certain limits, as, for illustration, six vanes are sometimes used, but as these pumps are used in automobile work it is the general practice to have three vanes, and the curving is away from the direction of rotation, an amount which is not necessarily of great importance in view of the desire for relative inefficiency at the higher speeds.

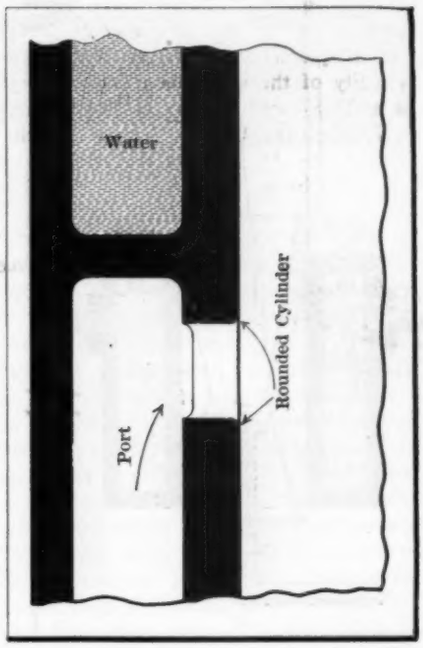


Fig. 12—Defective water jacket around port in a two-cycle motor

With gear pumps the situation is quite different, since the capacity is decreasing as the speed increases, and the amount of the decrease in capacity depends upon leakage, which increases somewhat as the speed. This class of pumps should not run faster than the camshaft, which in a four-cycle motor is half the crankshaft speed. If the pumps are run at a higher speed they will give out much sooner, and noise is difficult to avoid. The limit of speed from the noise point of view is 1,000 feet per minute, counting at pitch line of gears just as in gearwork in general.

Reciprocating (plunger) pumps do not seem to have a place in this class of work, due in a large measure to limited capacity, or, better yet, to the space they would occupy, which is at a premium under the bonnet in view of the room taken up by the motors and accessories. There is a series of paddle pumps from which to choose and when they are properly applied, which is a matter of limiting the speed and using a pump large enough for the work, considering limited speed, they seem to do very good work just so long as they remain tight.

Radiator Fixes the Appearance of a Car—There is no one unit in the makeup of an automobile which has such a large

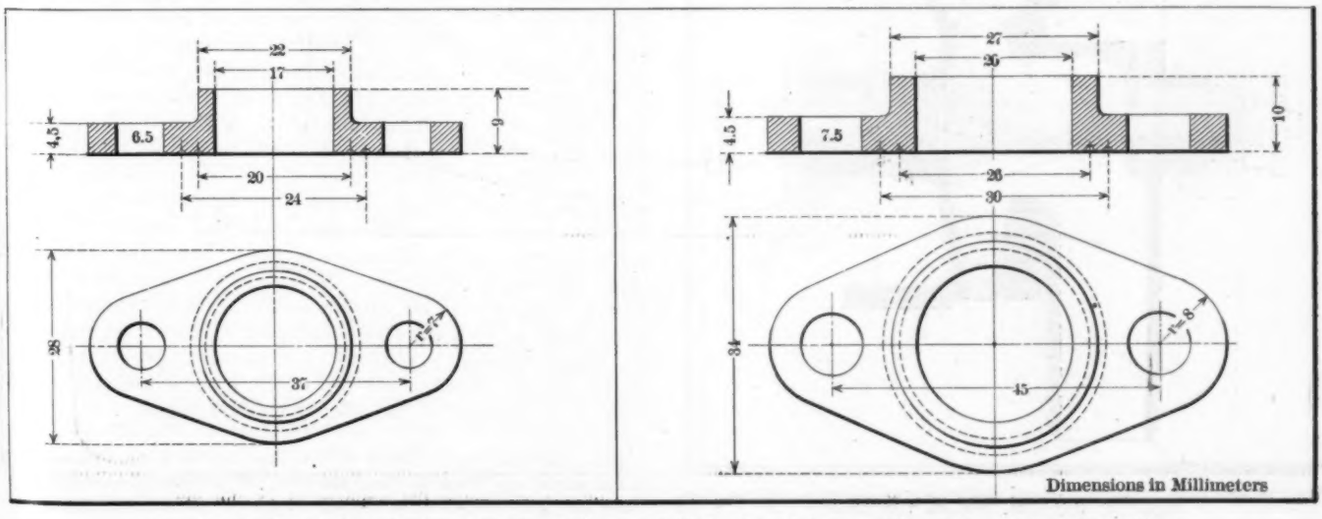


Fig. 11—Design of drop forged steel flanges for use with water piping avoiding heavy and frail castings

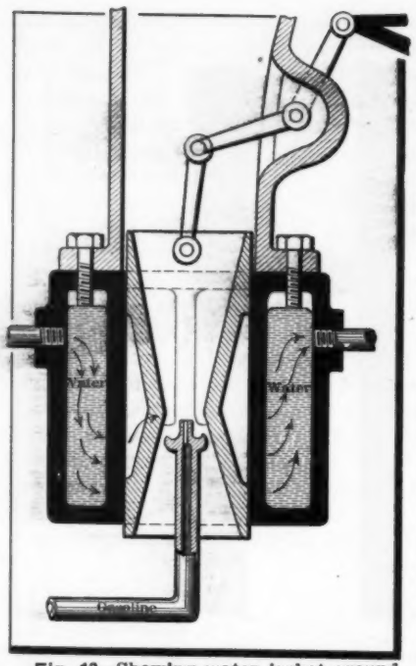


Fig. 13—Showing water jacket around carbureter, indicating a recovery of some of the waste heat

effect upon the general appearance as the radiator. The contour of the radiator is the same for the hood, and since the front end of a car is the most conspicuous, it naturally follows that it is prone to create the first impression. Fig. 9 shows the front of a Moore car, and while there are other and important features of a mechanical character to admire, even so, the radiator, as before stated, fixes the style.

Radiators are rather frail, and unless they are properly cradled they are likely to give trouble in service, due to the effect of road inequalities, first on the chassis frame, which ultimately induces torsional effects in the section of the radiator unless it is properly swung in view of the unstable nature of the platform. Fig. 8 adequately indicates the principle which is free from all such tendencies, and while there are several ways of carrying this principle into practice, the fact remains that the radiator should be free to respond to its individual inclination rather than to answer to the effect of road inequalities on the chassis frame.

Unless the water jacketing is carried well around valves much of the good that is expected from water cooling will be lost; in ports, for illustration, as shown in Fig. 12, the water should be carried all around them in order to afford an adequate measure of cooling. Fig. 12 illustrates a defective method, since the water jacket is stopped off on the upper side. Fig. 10 shows the spark-plug should be cared for in the same way. Flanges, if they are made of cast iron, will be frail, and heavy besides, whereas the drop-forged flanges, as shown in Fig. 11, are not only light, but they are strong and they present a good appearance as well. If the jackets are separate, as when copper jackets are shrunk over the cylinders on flanges, properly fashioned, it is important to make the joints so that they will not leak, as the result of vibration. Fig. 14 shows the method used on the Chadwick cars, in which a cylindrical copper jacket is fitted over a pair of cylinders, and the general appearance is rather good, while the manner in which the task is performed is such that the jackets remain tight in service.

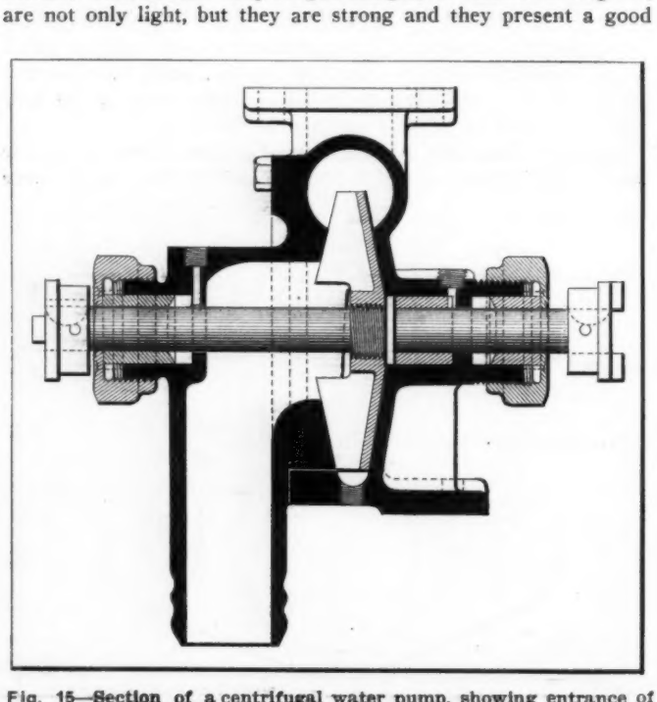


Fig. 15—Section of a centrifugal water pump, showing entrance of water at the side, around the shaft

Much Depends Upon the Ability of Air Propellers—If the fan is in the flywheel, it may be designed on a basis of a true screw, and the results will be very good provided the hood is tight and the motor is so thoroughly enclosed that all the air entering will have to pass through the radiator. This is a difficult condition to establish, and in practice it is generally safe to allow for a leak (around the radiator) of about one-third of all the air handled by the fan in the flywheel. Even with this allowance it is necessary to so design the hood and enclose the under side of the motor, that it will be quite as tight against air leaks as the best display of skill, on the part of the workmen, would seem to indicate. In some cases the vanes are placed on the periphery of the flywheel, and, as might be fairly expected, the amount of air handled will be on an increased basis, due to the greater peripheral velocity, attended, of course, by certain structural difficulties, such as a reduced diameter of the flywheel, hence a marked falling off of flywheel effect; clearance requires this modification, since, in general, considering the location of motors in chassis frames, flywheel diameters are somewhat restricted, even when fans are not placed on the periphery. If fans in or on the flywheel, are designed on a basis of air traveling at 30 feet per second, they will do very good service, and the number of blades to use will depend upon diameter, and the avoidance of over-lapping.

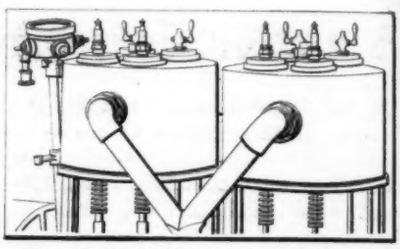


Fig. 14—Depicting a copper jacket over a pair of Chadwick cylinders, so fashioned that the connections come free

In general, it is the practice to use air propellers behind the radiator, even when the main fan is incorporated in the flywheel; this is a safety measure, taken, in view of the great difficulty involved in constructing a tight hood. When the flywheel is not brought to the aid of the air propeller back of the radiator, it is not to be supposed that the amount of air handled will be all that the occasion would indicate, for the reason that small air propellers are far from efficient, and to make up for this deficiency, it is necessary to employ a somewhat more commodious radiator to prevent radiator steaming.

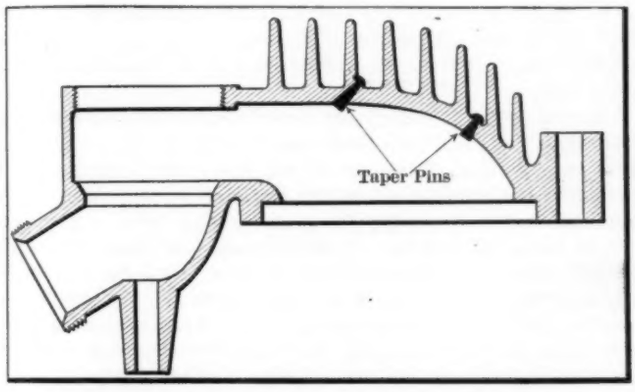
Hot Zones Abound in the Radiator—Unfortunately, due to the relatively small sweep of the fan-blades, when small air propellers are used behind the radiator, the effect is not uniform. If the radiator is approximately rectangular, covering an area of substantially 500 square inches of front (which is not far from the truth), even an 18-inch fan, which is about the largest size used, will only sweep about half of the front area of the radiator. It would seem to be a good idea to enclose the fan in such a way as to draw the air uniformly through all the tubes in the radiator, under the circumstances, but this practice has been avoided, owing to the difficulties involved, which are accentuated when the fan is belt driven. When the fan is in front of the motor, it projects an air current on to the front cylinder, which is of small account since the remaining cylinders are not given the same treatment. With the fan in the flywheel, the air is drawn by all cylinders and the effect is much more beneficial, since it is uniform in its effect on all cylinders.

Extracts from Vol. I, Part V, Chapter III, of a set of books, in preparation, by Thos. J. Fay, covering all phases of automobiling, from the point of view of designers, and in actual service.

INGENUITY IN THE MAKING OF REPAIRS

By Oliver Light

THERE is no trade or profession in which mechanical ingenuity is of greater utility or a more valuable asset to the fortunate possessor than in automobile repairing, where one is often called upon to make repairs quickly, which must be both practical and enduring. When failure of mechanism results through poor design or faulty assembling of cars or components at the factory, it is the repair man who must bear the brunt of the criticism, especially if he be agent for that particular make of machine. The owner can be pardoned for any lack



Method of Saving Cylinder Head with Taper Pins

of proper appreciation of difficulties which confront the mechanic, he realizing solely that the derangement will in most cases cause the loss of the services of the car, as well as involving considerable expenditure to make proper restoration.

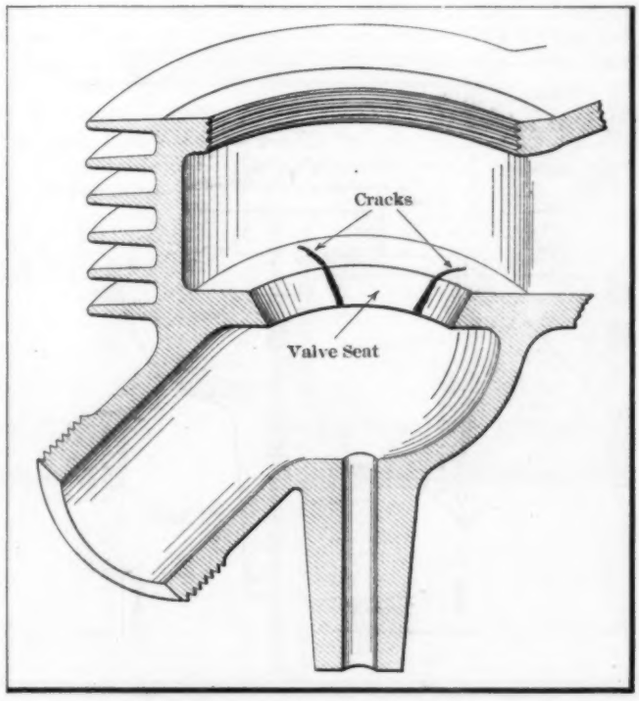
It must not be assumed that the writer means to imply that manufacturers of motor vehicles as a rule are negligent, or that poor workmanship and faulty design are often found in machines of standard make. Where any mechanism is produced in large quantities there will always be some machines that will not be as perfect as others, and with the demand which at present obtains for all classes of motor vehicles there is some excuse for failure to make careful inspection of the product before it is delivered. All motorists are not gifted with mechanical knowledge, their ranks being recruited largely from the business or professional classes, and it seems the irony of fate that the men best fitted by training and knowledge properly to appreciate and care for an automobile seldom possess one.

Then again, the larger proportion of the product is sold in territory more or less remote from the factory. Because of this the automobilist not proficient in mechanical work is dependent upon the factory representative for any attention that the machine may require, and in event of serious derangement the cost of repairs may be much greater than that of hundreds of miles of operation.

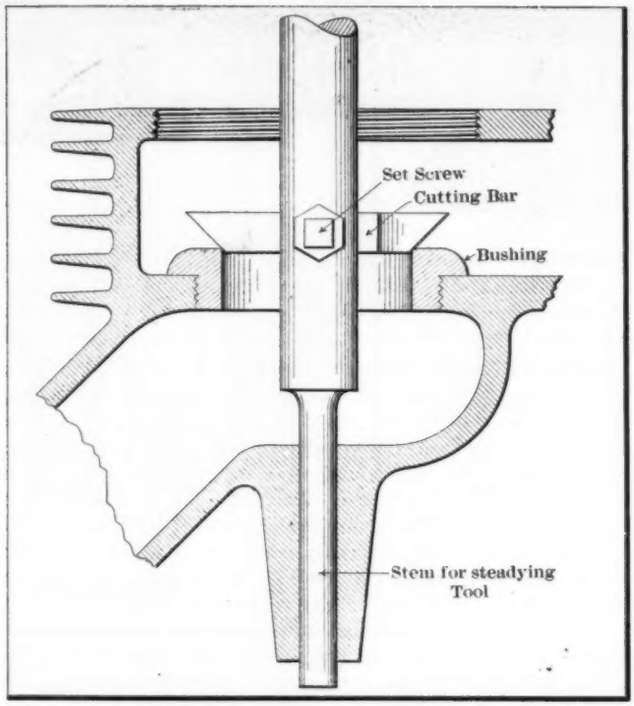
In event of serious derangement the ingenuity of the repairman may effect a substantial saving by repairs which will obviate the necessity of purchasing new parts. It is not that the components are always expensive, but there is necessarily more or less delay in obtaining spare parts from a distant factory. In many instances the parts may be restored to proper condition at small cost, not only eliminating delay, but also meaning a substantial reduction of expense, which is thoroughly appreciated by one of limited exchequer. As examples of what may be accomplished the writer will describe some repairs which were in every respect enduring and satisfactory, and although there is no great originality in the methods employed, the mode of restoration may interest, and perhaps be of some value to those who have to do with automobiles.

Saving a Flawed Cylinder Head—The owner of a machine of reputable make but old pattern was troubled with a mysterious loss of power and defective compression. After all points had been carefully examined and valves, cylinder head packing and piston rings found to be in good normal condition, the trouble was accidently discovered to be due to small blow or sand holes in the cylinder head which allowed a good portion of the gases to escape, especially when the head, of the cooled variety, became heated, the rise of temperature causing the metal to expand and the defects to become more evident and of more serious moment than when cool. The agent for the machine immediately advised the purchase of a new member, but as this was listed at $20, one can forgive the owner of the vehicle for his lack of interest in the suggestion.

The writer having been appealed to for advice suggested the removal of the defective combustion chamber for better examination. This was done and the blowholes discovered by inverting the head and filling with gasoline. One of these extended partly through a flange, while the other was between two of the cooling ribs. Facilities not being available for brazing or autogenous welding, the best method of repair which suggested itself was plugging the holes. A small eighth-inch drill was used to clean out the openings and to enlarge them sufficiently to run a small taper reamer through from the inside of the head. The outer end of the hole was slightly countersunk with a quarter-inch drill, and a standard taper pin of proper length and size was driven tightly into the hole. The portion projecting through the top of the head was riveted over,



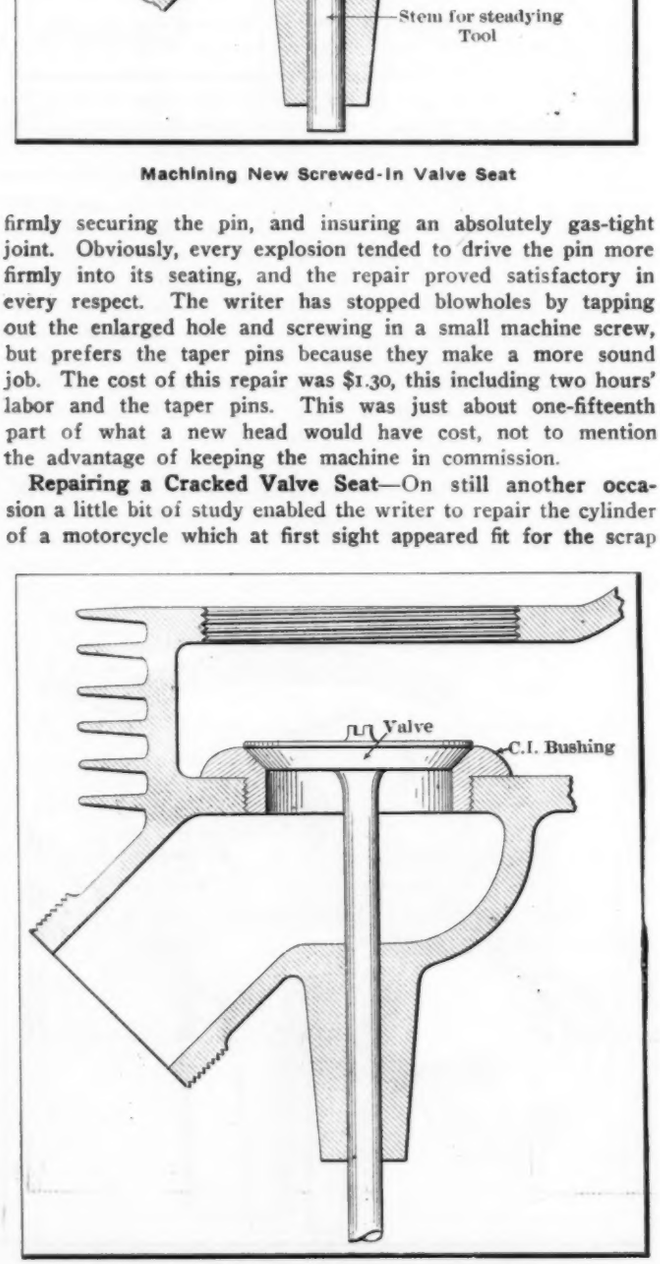
Cracked Valve Seat Eluded Detection for Long Time



Machining New Screwed-In Valve Seat

firmly securing the pin, and insuring an absolutely gas-tight joint. Obviously, every explosion tended to drive the pin more firmly into its seating, and the repair proved satisfactory in every respect. The writer has stopped blowholes by tapping out the enlarged hole and screwing in a small machine screw, but prefers the taper pins because they make a more sound job. The cost of this repair was $1.30, this including two hours' labor and the taper pins. This was just about one-fifteenth part of what a new head would have cost, not to mention the advantage of keeping the machine in commission.

Repairing a Cracked Valve Seat—On still another occasion a little bit of study enabled the writer to repair the cylinder of a motorcycle which at first sight appeared fit for the scrap heap. The trouble was manifested by loss of power, and upon test it was found that the compression, when the engine had become heated, was very poor, though appreciable resistance was offered if the engine was turned over while cold. Following a time-honored custom, the writer started to grind in the valves, and after a good seat had been obtained on the exhaust valve face, a test was made by daubing the seat with prussian blue to determine if the valve was bearing properly. Upon removal of the valve, inspection of the seat revealed the cause of the defective operation, namely, two good-sized cracks in the metal, as shown in the sketch. The valve chamber was integral with the cylinder, and perusal of the spare parts price list disclosed the fact that a new member would cost $15, while the factory was 1,000 miles away.



Showing How Valve Seated After Repairing

Upon the owner's responsibility, the writer undertook to make a repair, which was largely experimental, though later experience proved it practical. The cylinder was placed on the bed of a drill press, and firmly fastened in position. A special T boring tool, similar to the valve seat facing appliance shown (except that the cutter bar was adapted for boring), was placed in the chuck, and using the exhaust valve stem hole as a guide, the taper portion of the valve seat was turned away, leaving a straight hole a little larger than the over-all diameter of the valve head.

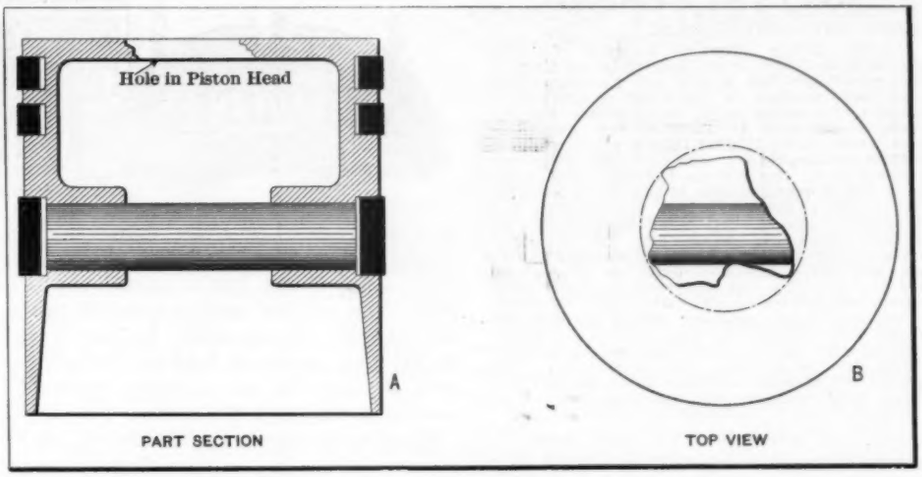
Once again the boring tool was brought into service, and this time, a piece of bar stock upon which a fine thread had been turned was used in place of the cutter bar. This piece was hardened, and placed in the holder, again using the exhaust valve guide as a steady rest for the lower portion of the tool; eight threads were cut into the 1-4-inch thickness of metal separating the combustion chamber from the exhaust port. An iron bushing was then turned up on the lathe to fit the threaded valve opening, and tightly screwed home, the bushing having been left large so that by heating the head it was shrunk in place. As further insurance against loosening, several small pins were driven into the wall of the cylinder seat to prevent the bushing from turning. The shoulder was of sufficient diameter to cover the edges of the cracks, with a small margin to spare.

By fitting a new cutting bar in the tool holder, the exact shape of the center section of the valve head, with the cutting edges at the proper angle for valve seating, it was not difficult to machine up the valve seating on the cast-iron bushing, and replace the valve. The effect of this repair was to raise the valve about one-eighth of an inch higher than the old position, which was easily compensated for by making a longer valve lift plunger, this being simply a three-inch piece of 3-8 cold rolled steel, case hardened. When the bushing was machined up the corner was rounded off as shown, as a sharp edge would doubtless have caused preignition of the charge when heated. This method of restoration was not costly, eight hours' labor at $4.80 and stock at 20 cents, bringing the charge to $5. As this time included making the special tool and the three cutter bars, it will be evident that the actual labor involved in putting in the bushing was very light. To make the cutting tool, a piece of seven-eighths cold rolled stock eight inches long was turned down for four inches to five-sixteenths diameter, this being the bore of the valve stem guide hole. A five-sixteenths hole was drilled through the large portion of the tool, and squared with a file. The stock of which the cutter bars were made was five-sixteenths square Novo steel, the tap being machined from a piece of tool steel bar the same dimensions, afterward hardened. A small 1-4-inch cupped point set screw held the cutter firmly in place in the holder after it had been accurately centered.

When an Overhead Valve Broke Loose—Another of the writer's friends was the owner of a well-known make of automobile the engine of which was fitted with overhead valves, and either through defective material or poor design it was a common thing for the valves to break, separating near the head, which fell directly in the cylinder. This meant one of two things in most cases: Either the top of the piston was punched through or daylight was admitted to the interior by the removal

of a portion of the cylinder head, either of which entailed somewhat costly replacement. After several months of very satisfactory operation, one of the exhaust valve heads became severed from its stem, and, in common with those which had gone before, sought access to the outer air. Instead of making an opening through the cylinder head, as was customary, it broke through the top of the piston, leaving a jagged hole.

New pistons could be procured from the manufacturer, who must have done a thriving business in that line at the rate of $10 each. The writer was again consulted, and upon examination the piston was chucked in the lathe, the hole bored out perfectly round, and a fine thread cut therein. A steel plug with a large mushroom head was machined to fit and inserted. The cost of the repair, including the labor of removing and refitting the piston in the cylinder was $2.60.

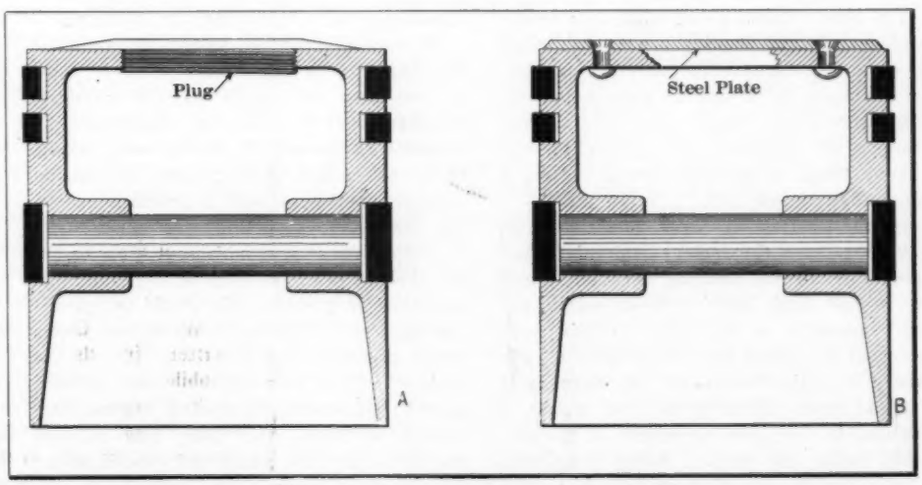


Two Views of Hole Punched in Piston Top by Broken Valve

A similar break on another machine was repaired differently. A thin plate of steel one-eighth inch in thickness was cut out and riveted to the top of the piston, which had been surfaced off to receive it. The rivets, of which six were used, spaced equidistant from each other, were put in from the inside of the piston, and the ends upset in a suitable countersink in the steel plate, so that the top of the piston could be filed free of all roughness. The edges of the steel plate or disc were chamfered as shown, being cut with ample clearance to avoid scratching or cutting the cylinder walls. Very small machine screws could be used, these to be put in from the top, if desired.

Although this method of piston restoration has the effect of slightly increasing the compression, and perhaps increasing the piston weight, it is doubtful if the slight increase in length or mass will have any appreciable effect upon the practical running balance of the motor, if of the multiple cylinder form. In the cases which have come under the writer's observation, the addition of the plate or plug made absolutely no difference in engine balance. In fact, the weight of the plate would perhaps be no more than that of the piece of metal knocked from the piston. The advantage of the plate on top of the piston is that it can be applied without machining or boring out the hole, and if the top of the piston is true, there is no occasion for surfacing it. No one will question the strength of such repairs, as steel is several times the strength of cast iron, and for that reason a thin-walled piece will have the same strength as several times the thickness of cast iron.

It is often advisable to make repairs of this nature in preference to buying new parts, not only because of the substantial saving, but because the components which have been used together will have "run in" and be a proper fit. Putting a new piston in an old cylinder (unless it has been accurately machined to fit) gives no advantage, as the rings must find a bearing even if well machined. Then again, if a new cylinder is fitted, as would be thought necessary in event of a cracked valve seating, a new piston and set of rings would be required as well to insure a proper relation of components. Of course there are parts which can be obtained from the factory cheaper than the cost of repairing and before doing any patchwork, as described, the intelligent mechanic will always compare the expense of new parts, freight, express charges and delay, with his estimate on the job of restoration, and follow the course which will save his patron money. A repairer who observes this policy will be in business when his less liberal competitors are long out of the business and forgotten. The sketches presented herewith are not actual forms, being merely to show principle, as obviously it would not be fair to present illustrations which would be detrimental to the interests of the manufacturers whose product has been discussed so frankly.



Different Ways of Repairing Broken Piston with Plate

MIXTURES OF HYDROCARBONS ARE BEST

Kerosene oil, while it can be and is used in motors, does not offer the advantages that follow the use of mixtures of hydrocarbons, such as do obtain in automobile gasoline, for the reason that the lighter and more volatile fractions in mixtures have a certain favorable influence on the heavy and less volatile product. When a light and a heavy fraction makes up the compound, the volatility of the heavy compound is hastened, and its rate of evaporation will be greater than would be the rate of evaporation of the same fraction in the absence of the light and more volatile fraction. True, the lighter of the two fractions will evaporate at the highest rate, and a residuum of the heavy fraction will have to be coped with. Even so, the situation takes on a practical phase, and it is because of this influence of the light on the heavier fractions, that makes it possible to consider a composite fuel, in which fractions can be included that would not burn alone.

DON'T LIKE GRINDING

Editor THE AUTOMOBILE:

[1,988]—Being constant readers of "The Automobile," we were anxiously waiting to see what Mr. Fay would tell us concerning the best method of finishing motor cylinders, which sums up to be grinding, but we here would like to have a few questions answered: Isn't it true that a grinder wheel will wear down to a less diameter from the beginning of the cut to the end, and since it is fed in parallel, will it not leave a cylinder slightly conical? Not to mention the fact that the wheel must necessarily be small, hence will wear fast, and a slight irregularity must be allowed for play of its spindle. We believe a cylinder, if reamed for the finishing cut and then polished with emery cloth on a wooden drum, would make a superior finish, arguing that a reamer will make all cylinders the same size and a slight use of the emery cloth will make a finer finish in the cylinder than a grinder. We would be pleased to hear from some who have used reamers for this purpose.

Denver, Col. PETERSON BROTHERS.

Yes, a grinder wheel will wear down to a less diameter at the end of a long cut, just the same as a reamer will. The writer is familiar with the practice in one automobile shop in particular where the old-fashioned method of which you speak is still in vogue. There, when the reamer wears down below size, it is sent to the tool room and the inserted blades are reset and then reground. In doing this, it is left five-thousandths above size so as to provide in part for future wear. This is used until it wears down to about four-thousandths of an inch below size, which is at the end of about ten reaming operations. That is, in reaming out ten cylinders the reamer wears from five-thousandths large down to four-thousandths small, a total of nine-thousandths wear. This occurs in machining ten cylinders, and the wear may be assumed to be fairly equal and even. In that case the cylinders may be assumed to be about as follows:

Number 1 cylinder, large .005".
Number 2 cylinder, large .004".
Number 3 cylinder, large .003".
Number 4 cylinder, large .002".
Number 5 cylinder, large .001".
Number 6 cylinder, just exactly to size.
Number 7 cylinder, small .001".
Number 8 cylinder, small .002".
Number 9 cylinder, small .003".
Number 10 cylinder, small .004", after which the reamer is trued up and the process started over again.

The above shows about what may be expected from the reaming process, although it doubtless represents extreme practice. In any case, it is fair to assume that by this process not more than half of the number of cylinders are correct to size (above there is but one correct in ten, a percentage of just .10).

In the matter of wear doubtless you have forgotten that emery is harder than steel, the former ranking between 9 and 10 in the scale of hardness, while the steel comes in at about 7. If this were not true it would not be possible to use emery to grind tools of the finest and hardest steel. Since it is true, would it not also be true that the softer of the two (this being the steel), doing practically identical work, would wear more?

Your argument would be very good if it were not founded upon the statement, "a reamer will make all cylinders the same size," which is not true to actual conditions. You will find upon examination that the majority of automobile builders use the grinding process in finishing the cylinders, although its use doubtless requires more skill than does the reamer.

To take up your last statement, if you use emery cloth to give the cylinder a fine finish, why not use an emery wheel (which is what all grinder wheels are) directly and save the work of reaming, obtaining your fine finish equally as well in one case as in the other?

ON HOT ENGINES

Editor THE AUTOMOBILE:

[1,989]—As you know, I have always advocated hot engines. I therefore wish to add a few words to your answer to Mr. Mannheim on page 273 August 12 issue. The Edge tests there given show nothing except the results from his particular engine. Many engines are so badly designed that they get hot in spots. They warp badly, or they do not oil properly. Or the oil used will not stand high heat, and so fails to lubricate. Any of these things would reduce power, and the Edge tests simply show that his engine was not properly designed for high temperature. The high efficiency of air-cooled engines, as shown on more than one efficiency contest, proves without the chance of question the value of temperatures much higher than water-cooled engines reach.

There are two decided advantages in particular to be found in a hot engine. At high speed, it heats the charge thoroughly so it ignites easier and is sure to burn more fully. At low speed, it does not get cooled down by the walls and so the pressure holds up to the end of the stroke much better, making the engine pull more like a steam engine. There are less misfires, less odor, greater economy of fuel and better results generally. After throwing off the spark the properly-hot engine will sometimes fire a charge in three or four, but this does no harm. So long as it is not hot enough to lose power on hard pulls it is not too hot.

Say to Mr. Sargeant that a little graphite will cure his clutch. This will not burn out like oil and stops the fierceness. If the spring is so weak that the graphite causes it to slip, then use a less slippery powder, like chalk, or fuller's earth. The presence of a powder seems to render the gripping gradual and more sweet than the clean leather.

Reading, Pa. CHARLES E. DURYEA.

Exception must be taken to some of the remarks on hot engines. It is hard to see how the walls of the cylinder, whether hot or cold, can influence the pressure at the end of the pressure stroke to a measurable extent, since exhausting always commences with a pressure of not less than 40 to 50 pounds per square inch. It is doubtful if it would be possible to get the cylinder walls so cold as to reduce this and even if it were, this would be an advantage, because lower temperature means lower pressure, and this is a time in the cycle when low pressure is desired; in fact, several prominent air-cooled engines desire it so badly that they add an extra valve with its additional complications for the express purpose of reducing it in a hurry and as much as possible.

CAUSE OF OVERHEATING

Editor THE AUTOMOBILE:

[1,990]—Will you please give me through "Letters Interesting and Instructive" all the possible causes that you think of, which might occasion the following trouble with a 35-horsepower five-passenger car, make-and-break ignition, Bosch magneto.

Going up a long, steep hill about 400 feet climb in a mile and a half (road perfect) about half way up the motor gets hot, the water steams and boils out of overflow pipe, motor slows down, misses, and there are explosions either in exhaust pipe or possibly back-firing in carbureter. The engine finally stops. There is no back-firing, however, upon starting it again, but it takes considerable cranking to get it to start.

Outside of this particular hill the car runs well, and has made runs in stretches of fifty miles without stops, on hot days, through hilly country (Pittsfield to Manchester) without any trouble.

Car is new and has been run about 1,500 miles. Panhard medium oil has been used. Each time I attempted to take the hill on the high gear. I have three speeds.

New York City. SUBSCRIBER.

Since you are using a good grade of oil, and using it freely, your trouble must be one of two things: either your spark is too early or there is something the matter with the water-circulating system. The first is just a possibility, whereas the latter is doubtless your real trouble. Look to the pump first and make sure that it is running all of the time. Yours may be one of the cars built with a weak point in the water-pump-driving system, which is intended to shear when an obstruction enters, thus saving the more expensive pump parts. This cotter or taper pin may have sheared without your knowing it. Running slowly, this would not be noticed, as with liberal water passages the engine would run thermo siphon. But when the engine is made to work hard the difference is noticed and, as you describe it, "the water steams and boils out of the overflow pipe." It may be that there is a screen somewhere in the water system which has become clogged up so that very little water passes through it. At slow speeds, again, this would have little effect, but when hills are climbed the engine needs more water, and the lack of it is seen.

It is just barely possible that the pump is too small for the engine to which it is fitted, and does not throw enough water to cool it satisfactorily. By connecting the pump to a source of water and pumping into a large tub, measuring the output for some unit of time, you can readily determine this. An automobile engine should have very nearly, for a rough-and-ready rule, a gallon of water per horsepower per minute, which in your case would work out to 35 gallons per minute.

If you don't fix this trouble at once, some time when you are attempting a steep hill on the high gear, your engine will get so hot as to seize, and then will be in for an overhauling and you, for a nice, large bill.

ANSWERED AND DISCUSSED

DIFFERING VALVE LIFTS

Editor THE AUTOMOBILE:

[1,991]—Will you kindly explain the following point in your "Letters Interesting and Instructive." My car has mechanically operated valves, all on one side, with adjustable lifts. These lifts are set with varying amounts of play, so that some lifts raise the valves from their seats almost at once (as soon as the lifts have risen, say, 1-32 inch or less), while others have 1-8 inch or more play. This condition produces a noisy valve action, although the lifts are fitted with spring-controlled buffers. The foreman at the maker's local branch says that this uneven setting of the lifts is necessary for the proper timing of the valves, so that each inlet, say, will open at the proper point in the stroke; and that if he "takes the slap out," the valves will be wrongly timed. Now does not this indicate that the cams are not accurately set? For, with a perfectly accurate camshaft, would not the same setting on all lifts—say 1-32 inch or 1-64 inch play—produce a correct valve action?

Your answer will oblige an interested subscriber. Daily papers are neglected when "The Automobile" arrives each week.

New York City. L. I. W.

If there are more than two settings, one for the exhaust valves and one for the inlets, the repair man was either making fun of you to cover his own lack of knowledge or else the manufacturer does not know very much about building engines. This is self-evident, from the bare statement that what is the right valve setting in one of four cylinders of any given engine is also right for the other three, and no amount of reasoning could make it different. So, if the valves and other parts of the valve-operating system are correctly machined, the proper clearance for number one cylinder valve lifter is also the proper clearance for numbers two, three and four valve lifters, whether this be 1/64, 1/32 or even 1/16 inch, of which more later.

Taking up the other side of the above, if the clearances must be different because the valve-operating parts are not correctly machined, we would advise you to sell the car and get a good one.

You are right about the correctly-machined camshaft. This should be such as to, in correlation with the other parts, call for equal setting for all lifts. Now, as to correct amount of clearance, this should be just as small as is possible and the smallest amount spoken of above, namely, 1/64 of an inch, would be about right for the average motor.

One additional possibility is this: In the past year or so the best or standard practice in valve settings has changed. Now, it is possible that your engine was built several years ago, and that the repair man is trying to give you an up-to-date valve setting with the old camshaft. If this is the case (and even in this the amount of clearance would be the same for all inlets and the same, but different from the inlet, for all exhaust valves; that is, there would be but two settings) have him stop it, as the best way to attain the up-to-date result is to buy from the manufacturer a camshaft of late date and install it in the engine. This would give the desired result without unnecessary noise, due to too much clearance.

FUEL ECONOMY AND HEATING

Editor THE AUTOMOBILE:

[1,992]—Will you please help me out in a little trouble that I am having, this being one of the few cases in which I have been obliged to seek outside aid. For several years I drove an air-cooled car of a popular make, having one of its largest type of four-cylinder engines. This season I bought a car of the same type from the same concern. With the old car I always got the best results from the engine when the gasoline supply was cut down at the needle valve to almost the extreme limit. This, also, as a matter of course, gave me the greatest fuel mileage. With the new car I find that when the valve is closed beyond a certain point, the engine overheats and looses power for hills and hard work, although when thus cut down it will run at a saving of fully one-third of the fuel. While the car will run all day at the hardest kind of work without a sign of overheating when the needle valve is properly adjusted for this result, it will badly overheat within a few miles if the supply is cut down much below this point. All of my former experience has taught me that an engine will work cooler with a thin carbureter mixture. I should be pleased if you would inform me through the department of "Letters Interesting and Instructive" in your journal as to the cause of this and as to whether an adjustment can be made to save overheating when the gasoline supply is cut down to its low economy limit. E. M. MURRAY.

Chicago.

There are two possible sources of the trouble in your case, both worth looking into. It is possible that you are using too late a spark, although the very good fuel mileage record would seem to preclude this. Then, it may be that the exhaust cams on this new car have slipped around so that the exhaust is opening too late. When the mixture is rich you get the required power at slow speeds. In that case, that is, with the engine running slowly, the effect of this is not very noticeable. When the fuel is cut down the thin mixture makes it necessary to run the engine faster to obtain the same power.

If there was a small leak in your fuel-supply system it might have the result you describe. Thus, if there was a pin hole in the inlet manifold casting the loss from a rich mixture would be a very small proportion of the total and would have no noticeable effect on the result. On the other hand, the loss from a very thin, poor mixture would form a large proportion of the total result and would affect the running of the engine so as to cause the overheating.

If, upon examination, you fail to find the trouble, it would be well to communicate with the manufacturers of the car, who, priding themselves upon fuel economy, would go to some trouble to set you right.

CYLINDER PATTERN-MAKING

Editor THE AUTOMOBILE:

[1,993]—I am thinking of building an automobile engine and want to inquire where I can get some knowledge of pattern-making and other information regarding such work. Is there any paper published regarding such matters? If so, would you please inform me of the name of the same. Or, in your judgment, where would it be best to seek such knowledge? I am an interested reader of "The Automobile" and find it a source of constant information. I think that I will try a two-cycle engine first, as that seems to be simpler than the four-cycle form.

Boston. EDWARD W. CARTER.

It is doubtful if pattern-making can be learned from books or other reading matters, for one reason, because very few pattern-makers are able to put their knowledge into words, and thus very little on this interesting subject finds its way into print. If you really want to learn pattern-making, the very best way will be to go into a foundry for about two years, moving around so as to get an opportunity to learn all parts of the trade. Then go into a pattern-making shop, and you will find that the two years spent in the foundry are just as much good to you as the same time spent in the pattern work would have been, or more so.

Many articles have been published in THE AUTOMOBILE lately on this subject. Possibly you have missed some of them. For fear that you have, we are appending a list of them as follows:

July 1 issue, pages 11 and 12.
July 8 issue, pages 53, 54, 55 and 56.
July 15 issue, pages 97, 98, 99 and 100.
July 22 issue, pages 137 and 138.

An excellent work on this subject, just published, may be obtained from the Class Journal Company, 231 West Thirty-ninth street, New York City. This is entitled "Practical Pattern-Making," by F. W. Barrows, and the price is $2. An old but good book on the same subject contains much of merit. This is "Pattern-Making," by Joshua Rose, and the price is about $2.50. If you are interested in books, "Modern Moulding and Pattern-Making," by J. P. Mullin, at $2.50, ought to be worth having, as ought also, "Foundry Practice," by H. M. Ramp ($3), and "Toothed Gearing," by A. Foreman Pattern-maker, the price of which is $2.25.

These trade journals are published which touch directly on the subject, as well as a number of others not mentioned, which touch on it indirectly: *Wood Workers' Review*, Chicago, monthly; *Wood Worker*, Indianapolis, Ind., monthly; *Wood Craft*, Cleveland, monthly; *Foundry*, Cleveland, monthly; *Castings*, Cleveland, monthly.

All of the others are directly interested in the wood and lumber trade, and so only touch upon pattern-making as a specific subject in an indirect way.

They would thus be of less use to you in your desire to learn pattern-making than would another journal devoted directly to this and allied subjects.

The best method and one that will give the most satisfactory results, if you are in earnest, is to go directly into the shop.

MORE ABOUT SKIDDING

Editor THE AUTOMOBILE:

[1,994]—In "Letters Interesting and Instructive" in the August 5 issue of "The Automobile" I read with much interest the letter on skidding and your remarks on same. You say that by turning the steering wheel in the same direction as the road wheels are slipping the skidding will be increased by reducing the resistance at front wheels. Now you seem to forget that while the car is skidding the rear wheels are still propelling the vehicle forward, and that when the front wheels are turned in the same direction as the car is slipping the tendency of the rear wheels is to straighten out with the front wheels, thus overcoming the tendency to skid in nine cases out of ten.

For example, say the car is skidding to the right, the front wheels are in the position they were before the car began to skid. The car is now attempting to describe a circle, the front part of the car going to the left, the rear part to the right; now when the wheels are turned in the same direction as the skid (to the right) the car naturally begins a circle in the opposite direction, the front part of the car going to the right, the rear wheels being thrown to the left; the front wheels are immediately straightened out and the skidding is temporarily overcome. Every experienced driver will tell you that this is the only way to keep a skidding car under control. I do not agree with Mr. Mayer about increasing speed when skidding. I find that by cutting off the current with clutch in and making the car turn the engine over, will in many cases prevent the car from skidding and gradually slow up, where an application of brakes would immediately produce side-slipping.

I notice that Mr. Chelf is having trouble with his Remy magneto, which he describes in letter No. 1,964. This trouble is altogether due to improper adjustment of contact screw of timer. When motor misses at slow speed, as his does, this rubber-covered screw should be turned to the left. Several adjustments should be tried and when he gets it right he will find that his engine will run better on the magneto than on the batteries at all speeds. The screw which holds the timer cover on should be loosened in order that the adjusting screw may be turned; when the proper adjustment is found, it should be again tightened. I. B. G.

Nashville, Tenn.

It is certainly news that when the car is misbehaving, so to speak, this action will be corrected by making it easier. That is, when the car is slipping to turn the wheels as you indicate removes the only obstacle to this slipping action. It is hard to see how this will act as a preventative; in fact, the more thought given to it, the more it seems as if this will increase the slipping action, by, as was said before, removing the only existing obstacle. In the appended figure, an attempt is made to explain this as the writer sees it and as he believes is right. Let A B C be the normal center line of the car proceeding along the street. Then let B D represent the center line of the car when skidding, the radius B E showing how the rear wheels rotate around the front ones as a pivot. In this position, the slight angle which the center line makes with the line of the front wheels, indicated by the angle and which increases with any increase in the slipping action, acts to prevent skidding. Although the action may be feeble, it is on the increase, and may ultimately become large enough to stop the slip entirely and solely of itself, as perhaps the hypothetical case indicated by the third position, F B G would seem to indicate.

If now, the wheels are turned to the right, as shown in the second part of the figure, which represents the same case but with front wheels turned so as to make a right angle with the new or skidding center line. In this case, the obstruction or drag on the movement offered previously by the front wheels is absent, and the wheels, in fact, the whole car, is perfectly free to continue its rotation so long as any impulse to do so remains. Not only is this drag removed, but by turning the front wheels in a direction which frees them, they are liable to start in and participate in the movement by rolling in the general direction of the skid, which then becomes a tangent to the former direction of motion, instead of the circular movement.

If, instead of turning the front wheels in the direction of the slip, they are turned in the other direction, the angle of resistance to the motion, and with it, the resistance itself, is materially increased, as shown by the larger angle B. In this latter case, the motion tangent to the first movement is impossible, since not only the rear wheels but the front ones as well must be bodily dragged sideways, as indicated by the two arrows. The more thought one gives to this question, the more one is convinced of the correctness of the above.

Thus far, the reverse action of the front wheels, rolling to the left for a rear wheel skid to the right, has not been considered, but a moment's thought will convince that this would, like the rear wheel action, only be increased by turning the front wheels at right angles to the skidding direction.

This is self-evident if it is considered that with the wheels left pointing forward, they must, to roll to the left, scrape across the pavement, this action being directly against the side of the tires, and being also such as to pull the tire off of the rim. Now, we know that the latter accident does not happen.

By turning the wheels in the direction of the sliding, even this resistance on the part of the front wheels is eliminated, and they are free to pursue any tendency to roll around to the left. The result of this would be to spin the car around its midpoint, like a top, the front wheels turning to the left and the rears to the right.

Our thanks are due to I B G for his solution of the Remy magneto trouble, and the attention of Mr. Chelf, the writer of letter number 1,964, is directed to this way out of his trouble.

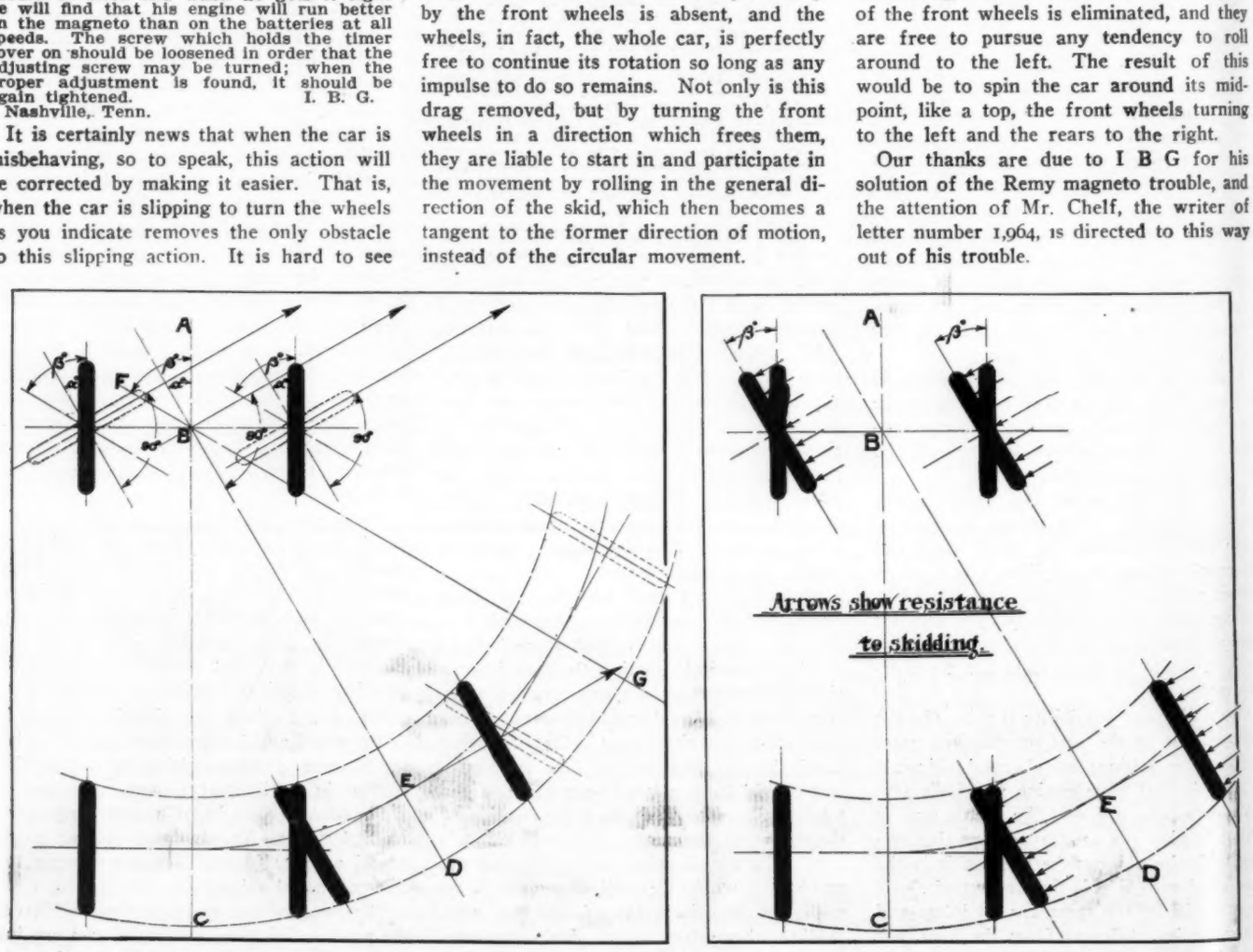
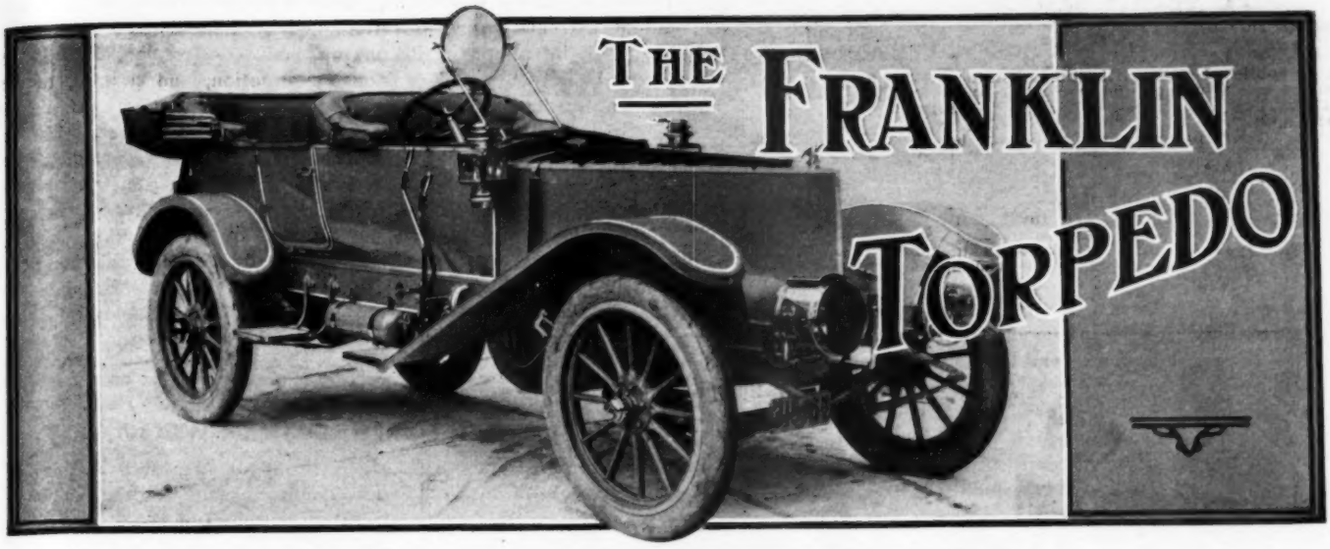
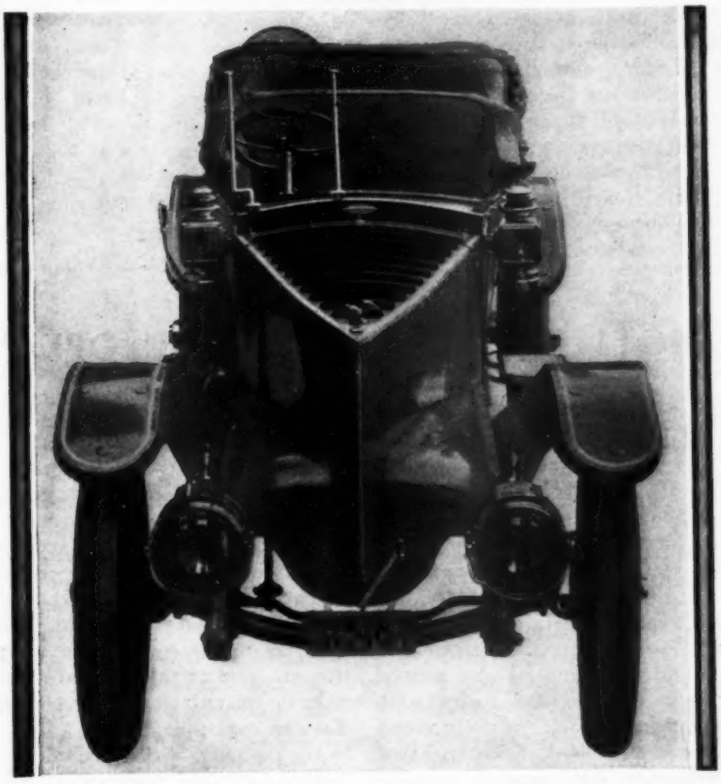


Diagram of Happenings When the Car Skids and (at the Right) the Proper Way to Turn the Wheels to Avoid It

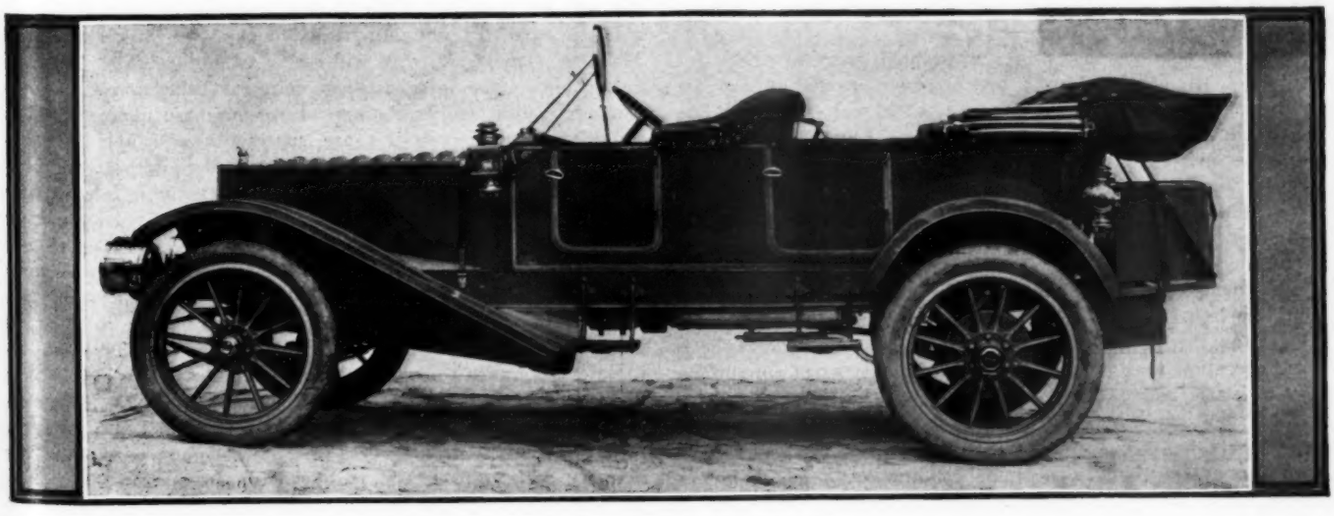


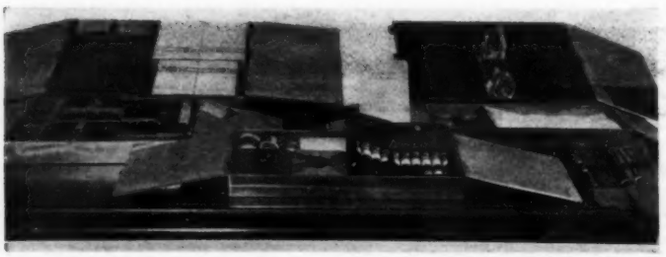
THE FRANKLIN TORPEDO

FIRST among the American adaptations of the "torpedo" body designs so popular in England is a special six-cylinder Franklin just completed by the Syracuse, N. Y. factory, for the personal use of H. H. Franklin. This Franklin "torpedo" shows several radical departures from its European models, and in one respect at least, markedly improves on them. The European practice, as has been frequently illustrated in these columns, is to confine the characteristic torpedo effect to the body proper, leaving the hood in its original square shape. The Franklin, however, extends the torpedo idea to its logical conclusion, and makes the hood pointed, like the prow of a boat. This at once brings the whole of the car into harmony; in fact, the hood now gives the keynote of the whole design. The rest of the body continues the boat-shaped lines in a graceful curve to the rear, swinging upward around the tonneau seat. The doors, of course, are full height, both front and rear, two for entrance into the tonneau, and one, on the left side, for the front seat. Thus an unbroken line, emphasized by a molding, sweeps around the car like the gunwale of a boat.



This Franklin body is built on the regular six-cylinder 42-horsepower chassis of the 1910 model. The car has a special bevel gear ratio which enables it to attain a speed of from sixty to seventy-five miles an hour. The novel design of the hood is made possible by the 1910 Franklin air-cooling system, which eliminates the fan formerly





Some Things the Franklin Torpedo Locker Contains

necessary. Admission for the cooling current is provided by louvres in the top of the hood. The body is of aluminum, finished in battleship gray striped with pearl; instead of the usual high polish it is given a simple rubbed surface, very business-like in appearance. Mr. Franklin's monogram appears on the doors. The seats are low and deep, with ample leg-room, and are upholstered in chocolate-brown goat-skin. The same material is used for the rest of the interior. The folding top, instead of the regular black, is in a rich dark blue. The windshield is of a type never before seen on a touring car, though often used in Europe on racers. It is designed to afford protection to the driver only. The glass is circular, about a foot in diameter, and is held on an adjustable standard, close in front of the driver's face. All exposed metal work has a nickel finish.

The equipment of the car is unusually complete. It includes an electric speedometer light and small electric auxiliaries to the oil side and tail lamps. The rear construction provides lockers and drawers for stationery, toilet articles, a first-aid-to-the-injured outfit, caps, goggles, gloves and maps. The name "Franklin Torpedo" is displayed on a silver plate on the Circassian walnut dashboard, where it extends above the hood, and the extreme "prow" is surmounted by a small silver eagle.

Not by reason of its unusual body construction alone is the Franklin "Torpedo" of interest, but also as an example of the growing tendency among men of means to give their cars an individuality lacking in the ordinary factory product. When a man has his yacht built to order and christened with a distinctive name, he does not wish to have his automobile, sometimes representing an equally great investment, resemble other men's cars, like peas in a pod. This tendency in turn reveals another, namely, that the automobile is not now regarded as the plaything of a single season, to be used a few months and then cast aside for a newer, but rather as the companion of many tours, whose usefulness will endure for many years of pleasurable and economical driving.

COMPANY FORMING IN OSWEGO, N. Y.

Oswego, N. Y., Aug. 23—A group of financiers in this and neighboring cities has about completed plans for the formation of an automobile manufacturing corporation. It is expected that papers will be requested within a few days, and work upon the new plant being built for the Ontario Industrial Company, at the foot of West Albany street, is being rushed. One car has already been finished for experimental purposes, with a four-cylinder motor, an extra long wheelbase, and other modern features, and others are to be manufactured for 1910 delivery. The following appear as backers of the concern: Col. John T. Mott, C. C. Place, H. A. Wilcox, John P. Miller, D. W. Pell, T. P. Kingsford, A. N. Radcliffe, George E. Farrell, A. H. Mowry, James Dowdle, L. W. Mott, B. S. Adler, H. J. Wilhelm, T. A. Clarke and E. B. Powell.

WILLYS PREDICTS GREAT YEAR FOR EUROPEAN INDUSTRY

NEW YORK, Aug. 21—Contrary to the prevalent opinion in this country, that the European automobile industry has perhaps reached the zenith of its progress, are the ideas expressed by John N. Willys, on his return this week from a round of foreign factories. Although traveling ostensibly on a vacation trip, his connection with the automobile industry in this nation, as president of the Overland Automobile Company and the Marion Motor Car Company, of Indianapolis, led him to give the situation across the Atlantic a serious study. For two months he watched the wholesale and retail business, the work of the various factories, and the trend of the general activity in England, France, Italy, Belgium and Switzerland. His impression is that 1910 will unquestionably be the greatest year in the history of the European automobile industry, based not only upon the work in connection with pleasure vehicles, but even more so with the commercial and taxicab departments.

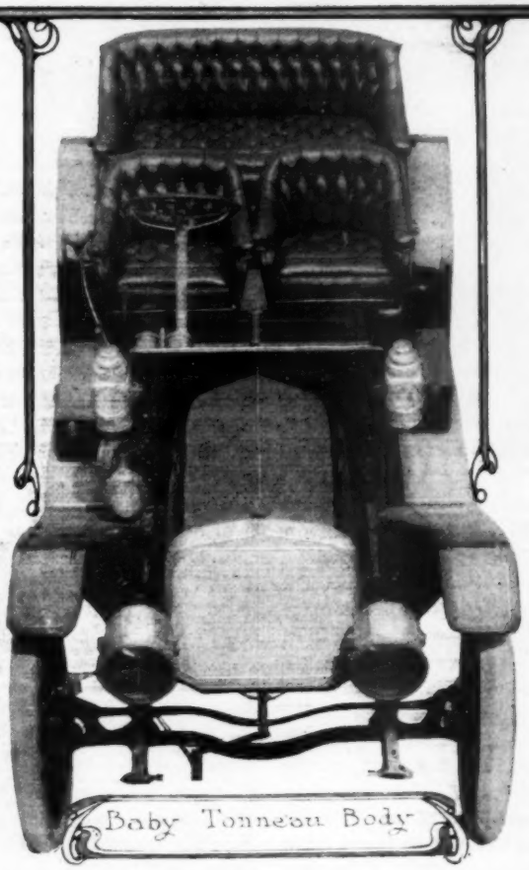
"The automobile industry in Europe held many surprises for me," says Mr. Willys, "for I had the opinion that it was declining, but I believe that the opposite is the real situation. The entire effort of the factories, however, is being directed only along the lines of taxicabs, commercial vehicles, and high-priced pleasure machines. The development of the low or medium-priced automobiles has been almost neglected. Paris, London, and other large centers are fairly alive with taxicabs. In New York, Boston, Chicago, and other American cities we think that a great quantity of these machines are in use, but the numbers being employed cannot compare with those in the English capital and on the Continent. Roughly counting, I do not believe it exaggeration to state that there are at least 5,000 automobile cabs in Paris and 2,000 in London.

"The same applies to the business in commercial vehicles, in which there has been great progress. The last five years have made wonderful changes in traffic conditions abroad, and it is hardly conceivable that in such a short time so much of the horse-drawn movement could have been supplanted by the motor-driven machines. There are hundreds of auto-buses in London and Paris, and scores in all large cities, some double-decked, but usually with a single deck, to facilitate handling. I was greatly impressed by the prevalence of limousines, landaulets, and other types of high-priced European cars, as compared to the general use of these machines in this country, including those of domestic make, of course. The surprise was induced, probably, by the absence of the low-priced or medium-priced class, for but few of this kind are made, due principally to the fact that the manufacturers have confined themselves to the powerful and expensive output.

"In my opinion there is an excellent field abroad for medium-priced American machines of good quality, and it is the intention of our concerns to enter that business as soon as we are able to care for the American demand for Overlands and Marions. Just when this will be is indefinite. The European automobile public is gradually coming to believe in the American production, and is about ready to purchase imported goods, providing that the models are successful, and not the over-production. The business should be started conservatively, however, so as not to antagonize the foreigners with reports of a so-called 'invasion.' The success of the moderate size cars in this country has influenced the designers on the other side to give attention to this type; but, as yet, their small cars cannot compare with ours. They concede the American superiority, and I believe that it will take them some time to be able to construct machines that will equal our own. They do not have the up-to-date machinery to give large output, unless they have gotten it from America. It was noticeable to me that the manufacturers with whom I spoke do not consider the American small cars sneeringly, as they once did. Rather they gaze upon our industry with respect, and perhaps with fear.

CORBIN APPEARS IN 1910 FORM

SLIGHT modifications in the motor, a lengthened wheelbase, a heavier frame and additional equipment are the principal changes in the "Full Jeweled" Corbin for 1910. The model which was so successful during the passing season has been retained nearly in its entirety, the only details altered being characterized as distinct refinements. Produced by the Corbin Motor Vehicle Corporation at New Britain, Conn., associated with other large manufacturing establishments, the cars have been the results of splendid engineering skill and knowledge, and it is the announced intention of the factory that the same standards shall be maintained throughout the immediate as well as future seasons.



As in the past the efforts of the entire force will be concentrated upon a single model, giving the experiences gained in five years of making Corbins, and some of the constructive details proven in the models in which they were pioneers are important still. With one type of chassis will come two motors, either water or air-cooled, though the latter will be made only on special order, and the two engines are interchangeable, of course, with their individual fittings. The success of the 1909 season was so marked that the prospects become bright for an even more flourishing one ahead and orders for material sufficient for 600 automobiles have either been let or are pending. It is planned by the officials to turn out that number of cars during the 1910 period and already deliveries have been going on for a month.

Details of the Changes in New Models—As has become somewhat general among the stable members of the industry, standardization has been attained to such a degree that few deviations are necessary. In the new Corbins this will be well illustrated, for the variations from previous practice may be counted upon the fingers of one hand. In the motor itself the principal ones include enclosed timing gears, a new type of oil pump and a changed location, and the moving of the magneto from the front inlet side to the rear exhaust side. The oil pump was formerly mounted midway on the exhaust side and driven directly from the camshaft, but now it is further back on the same side and is driven by the same helical gear which operates the distributor. The pump is now a centrifugal one instead of plain-gear and forces oil from the reservoir, under the foot-boards, through dash sight feeds to the four cylinders and thence to the crankcase for splash. The two-to-one or timing gears remain at the forward end of the case and are enclosed in an aluminum oil-tight case. A Bosch magneto is now regular equipment and this is placed at the rear of the exhaust side and driven by aluminum to fiber gears from the camshaft. In previous models this has been extra equipment and provision was made to drive it from the timing gears at the front next to the carbureter. The change keeps all moving parts on one side.

In the chassis the frame has been lengthened 2 1-2 inches and this put into the wheelbase to insure greater comfort in riding. To make this possible the frame members have been made 1 inch deeper in section. Looking toward the same end, that of ease, the tires are now 4 inches in diameter all around instead of 3 1-2 front and 4 in the rear. Hartford universal joints are used in the driving mechanism and the driving shafts in the rear axle are made of vanadium, instead of nickel, steel. A slight change has been made in the engine support whereby a lighter steel beam is introduced to transmit the torque reaction from the engine to the side frame members. The engine is supported as previously, but the steel beam takes the place of a deeper and heavier one of aluminum.

Arrangement of the Corbin Motor—No departure has been made in the type of water-cooled motor used in 1909, it having four cylinders cast separately with the valves all on one side—the left looking forward. The bore is 4 1-2 inches and stroke 4 1-4 inches. The exhaust and inlet manifolds are held in place by a series of four yokes, the exhaust pipe going directly to the rear, while the inlet takes a turn between the second and third cylinders to the carbureter on the other side. The single camshaft is driven from the enclosed gears at the front, operating not only the cams, but also the water and oil pumps, the distributor, and the magneto. The fan is mounted upon the front cylinder and driven by a rope belt which is held under tension by a spring and lever arm. The water enters the pump at the bottom, is forced to the jackets from the opposite side, the piping passing between the first and second cylinders, and is returned to the honeycomb radiator through a copper tapered manifold on the top. By the use of single cylinder castings a five-bearing crankshaft is permitted with plain bearings of Parsons white brass between the cylinders and the two end supports are of the annular ball type.

The aluminum crankcase is divided, the lower half being held by through bolts which at the upper end hold the cylinders down on the upper half. This is a construction which secures great simplicity. To inspect the interior of the case there are two very large hand holes on the carbureter side of the upper crankcase half and the connecting rod bearings may be taken up through these. Their size makes the operation very easy and an entire piston and connecting rod may be removed without disturbing the rest of the motor. Another point of accessibility is secured in the manner of holding the cam rollers. These are pinned in such a way that with the withdrawal of a cotter pin and by sliding the bolt to one side the roller may be removed through the crankcase hand holes from the opposite side. The hand hole covers are retained by a yoke and single turn screw, so that they can be removed in a twinkling. A relief cock is placed in the head of each cylinder. Inspection of the timing gears is facilitated through the use of a separate casting cover held in place by three cap screws. The entire water system is so designed that it can be taken off or put on with no difficulty, the former operation being confined to the un-

Carbureter Side of Motor—Showing Hand Hole Plates

coupling of two unions and the unloosening of a castellated nut to remove the pump and then the regular process of taking off two manifolds. These arrangements aid in caring for the car.

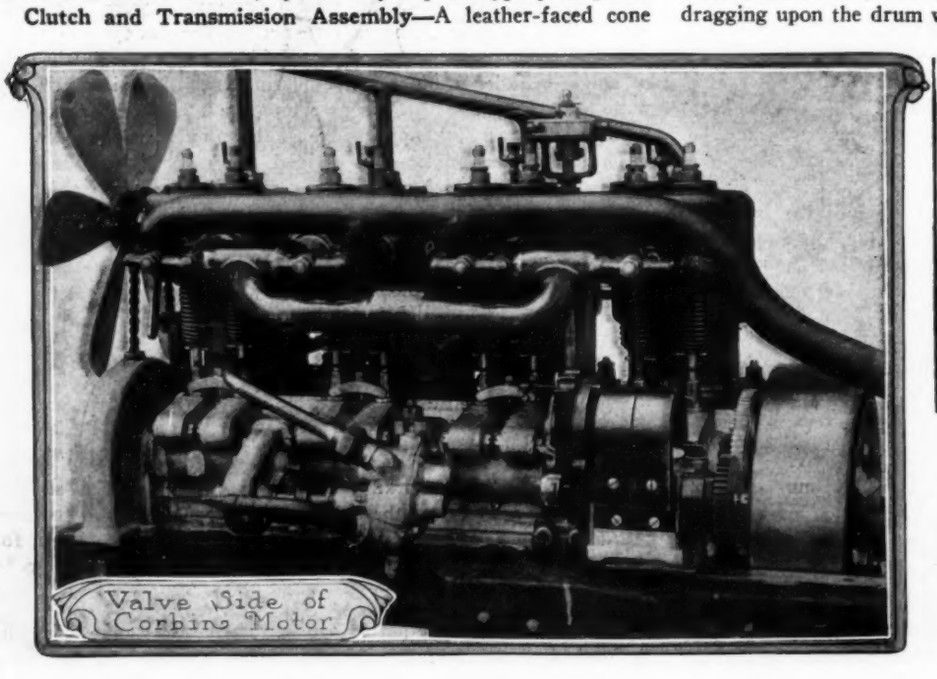
The addition of the magneto to the list of regular equipment now gives the Corbin a double set, the one with the Bosch magneto and a one-point Connecticut coil and the other with a Connecticut coil and distributor, using a storage battery or six dry cells as source of current. The magneto, as has been explained, is driven directly through gears and is readily accessible. The wires are led between the second and third cylinders, a guide being arranged on the top of the inlet manifold, to the fiber cable-lead and thence to the spark plugs. The magneto plugs are placed over the inlet valves, inasmuch as most of the running will be done with this system, while the batteries have a set over the exhaust valves, but in the same pockets. The distributor is controlled from the lever on the steering wheel through bevel gears at the base of the column and a rod passing between the third and fourth cylinders.

A water-jacketed Schebler carbureter is used, controlled also from the top of the steering column and a single rod. A foot throttle is also connected, operated by a piano-type push pedal.

Clutch and Transmission Assembly—A leather-faced cone clutch with three springs is used to transmit the power from the flywheel through a keyed shaft, with a sliding joint to allow vertical freedom. The clutch is held in the flywheel by three powerful seating springs and the thrust taken up in a ball bearing. A long lever arm on the foot clutch-pedal makes the operation of the clutch easy and the disengaging mechanism is as simple as possible, ball bearings being employed on the end of the fork.

Three forward and one reverse speeds are secured in the compact selective sliding gear transmission. This is placed immediately at the rear of the clutch-engaging assembly with the shifting rod entering it at the top just under a removable cover plate. The case itself is of aluminum in halves so arranged that the gears, slide bars and operating levers all act in oil. The gears are made of high-grade steel, case-hardened and ground, and the shafts are supported on F & S imported annual ball bearings. The final drive is by shaft through two Hartford universal joints to a semi-floating rear axle. The shafts are of nickel steel, heat-treated and mounted upon annual ball bearings with a special bearing to take care of the thrust. There are seven annular and two thrust bearings in the rear construction, making this expensive, but being conducive to longer life and less wear. The driving pinion itself has three of the annular and one of the thrust bearings. The torsion strain is taken from the rear axle by a long tubular rod extending to the cross-frame member just at the rear of the transmission and its end is there held between spring bumpers. The spring seats are oscillating to give an easier motion to the body of the car and to place less strain upon the rear construction. The gears and differential can be removed without removing the axle from the car, by taking off the upper half of the housing.

Two complete sets of double-acting brakes are placed upon the rear wheels, one set—the external—is operated by the foot pedal, and the other by a hand lever at the side, as is general practice. The former brakes are floating bands lined with camel's hair, and a flat spring on the outside keeps them from dragging upon the drum when not engaged. Bronze shoes acting upon the steel drum constitute the internal system and both are so arranged that the pressure upon them from either the foot or the lever is very great. The springs are all long, of the semi-elliptic type, and the rear ones have a scroll turn at the rear with a spiral spring tending to give easy-riding properties.


Valve Side of Corbin Motor

Steering Gear—A worm and sector irreversible steering gear is used in the new models as in those in the past in which it gave great satisfaction. The teeth are cut by the Hindley process which gives long bearing surfaces thereby preventing quick wear, and the sector and sectorshaft are made in one drop forging, mounted on bearings of bronze. The wheel itself is made of wood with a finish which protects it from water and keeps the color constant. The spark and throttle operating levers are placed upon a stationary quad-

rant in the center of the steering wheel. Ball thrust bearings above and below the steering worm tend to reduce to a minimum all wear, and together with the ball bearings in the pivot heads, make the steering remarkably easy.

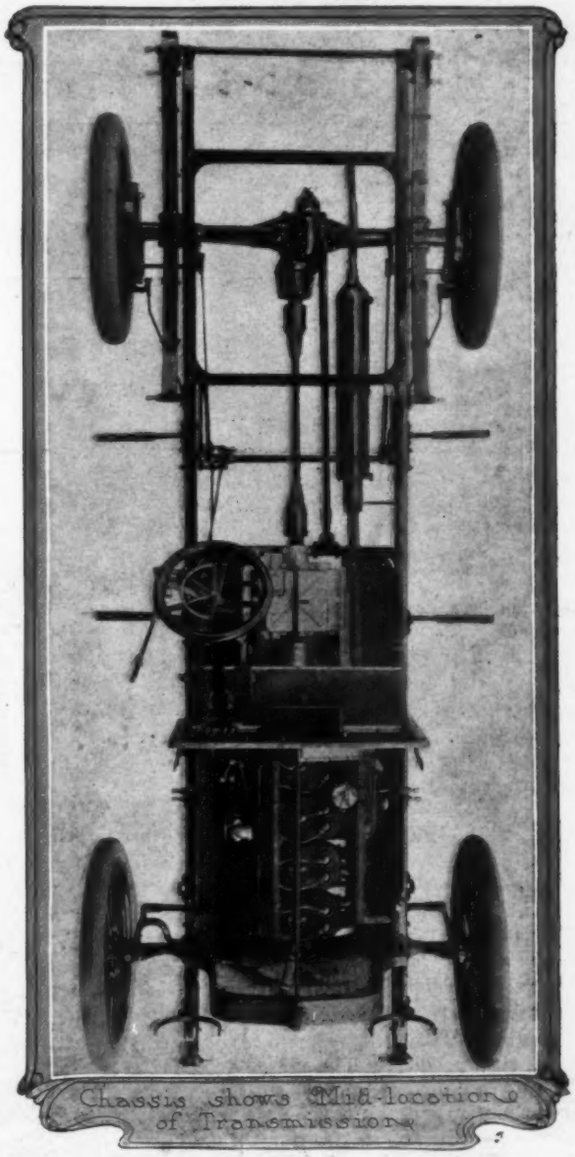
The I-beam front axle is a one-piece drop forging of alloy steel properly tempered, with large jaws at each end to receive the pivots and with the spring seats integral. The pivots have large ball bearings at the top to take both the load and the steering strain. A distinctive feature of the Corbin front axle construction is seen in the fact that no through bolts are used to hold the pivots in place, but the forging is so made that the pivots cannot be forced out except by removing a bushing in the lower jaw of the axle. The bushing is held in place by two cotter pins. The steering cross rod is placed at the rear of the axle, thus being protected from any possible damage from road obstructions. All nuts in the system are castellated, and due provision is made for adjustments to take up the ordinary wear in the joints. The cross rod is dropped in the center, conforming to the shape of the axle, and to obviate any chance of its hitting the dust pan under the engine.

The air-cooled motor will this season be installed in cars only on order, but the construction is such that there is no difficulty in making the change when the car is purchased or built. The method of attaching the engine to the frame is the same in both cases, as is the ignition, oiling and transmission connections. The cylinders are of the same size as the water-

cooled ones, but are different in the essential construction aside from the difference in cooling. Their bore is 4 1-2 inches and the stroke 4 1-4 inches, but the valves are in the head, operated by push rods and rocker arms. There is but one camshaft and this works both valve tappet rod sets, the exhaust directly above it and the inlet through a set of rocker arms in the crankcase. The valves are located in cages in the head of the cylinders. Cooling is effected through a series of sheet metal flanges set spirally in the cylinder walls and the wavelike shape gives the air a better chance to touch the entire surface. The coming season will be the third for this type of air-cooled motor.

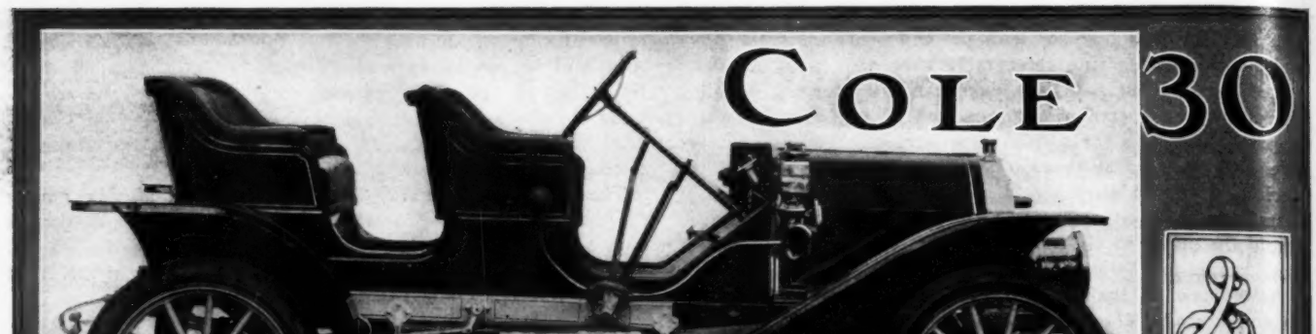
Four Body Models—The Corbin Company, while concentrating its attention upon one chassis, will give an option of four different styles of bodies—the five-passenger touring car, the four-passenger roadster, the four-passenger baby tonneau and the limousine. The only appreciable difference necessitated in the chassis by any of these is that the wheelbase for the limousine is 6 inches longer than for the others. The standard length is now 110 inches and the enclosed model will be 116. For the roadster and baby tonneau cars the steering column is given a slightly increased rake and the gear ratio may be altered if desired. Inasmuch as the equipment now includes the magneto, the Prest-O-Lite tank and the cape top, the price has been raised from $2,500 to $2,750, with the enclosed cars, of course, proportionately more, but the increase is less than that to which the purchaser was put in equipping his car heretofore. The color finish of the cars will be to some extent optional, for a number of choices are offered in the new catalogues. Another wide range of choice is seen in the fact that any make of American tires will be placed upon the car, according to specifications. Body lines on the 1909 cars were so well liked that the alterations are minor ones, the fenders, general appearance, and finish being of the same character, with just sufficient variations to distinguish them as new models.

The familiar trademark, "Full Jeweled," will also be among the features retained, for the cause of its first application is still found in the large number of annular bearings used. There are 20 of these, distributed as follows: four in the front



wheels, two on the crankshaft, five in the transmission, seven in the rear axle, and two in the clutch. These enable the car to be moved with the minimum of frictional resistance, consequently reducing the loss between the motor and the road wheels, and at the same time increasing the efficiency of the entire machine.

Throughout the spring the extensive factory of the Corbin Company has been working steadily upon the output, so that with the completion of the season it was well prepared to enter upon the new orders. Material has been going through for some weeks, and machine work is being done in advance to be ready for the urgent demands. Night work has not been found necessary with the existing facilities, but from present indications it may become imperative very shortly.

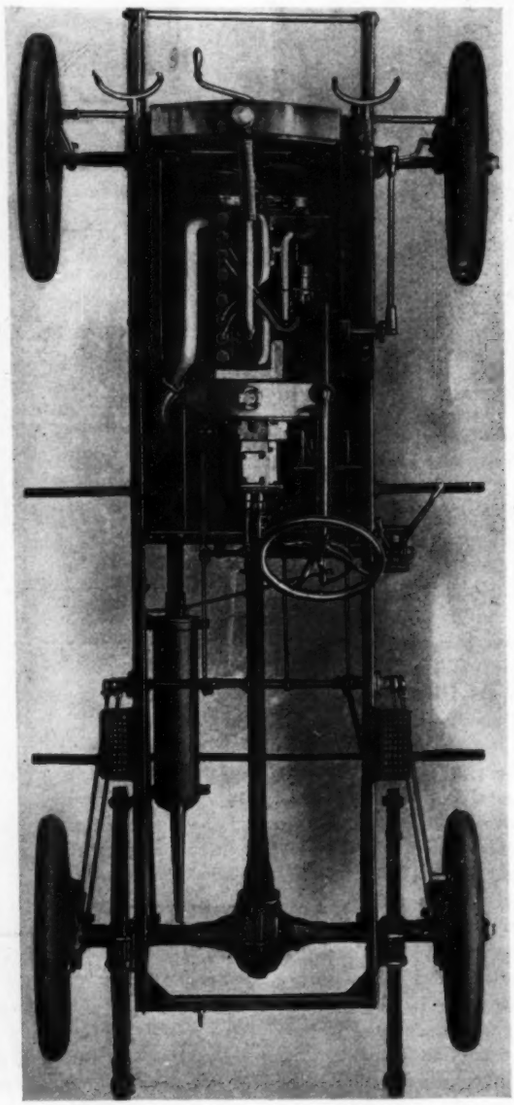


NEW among the cars for 1910 is the Cole "30," which, however, shows no new and untried features but is constructed upon correct and accepted lines, which have shown merit in the past. It is an Indianapolis production, being built by the Cole Motor Car Company of that city, and sold by the Henderson Motor Sales Company. Wisdom is shown in the election to build but a single model, upon which factory and sales effort will be concentrated, this being named the Cole "30."

In this, the source of power is a four-cylinder motor, comprising part of a unit power plant located at the front end of the chassis, driving back through a slightly inclined shaft to the live rear axle. The engine has the 4 by 4 cylinders cast in pairs, with the valves all placed on the left side. This form of construction makes the engine very simple, for there is but one camshaft, one set of cams, and all valves being located close together, repairs or adjustments are more easily made. To avoid complicating the motor, the magneto, a regular part of the equipment, is placed on the right side, as is also the water pump.

Connected to the motor as an integral part, is the clutch, which is of the cone type. This is of the direct cone variety, the removable clutch leather surfaces working directly on the flywheel proper. In it, as in the whole power plant, and in fact, throughout the car, simplicity has been sought and attained. As few parts are used as will actually do the work, which means a great deal to the prospective owner, since fewer parts means fewer sources of wear, lesser number of joints to wear loose and a smaller number of parts to be repaired, in case of accident.

Not only is the clutch made one with the engine, the cases of the two being rigidly fastened together, but the transmission case, also, is joined to the other two. This form of construction, combined with the suspension which it allows, keeps the bearings, the vital parts of any piece of mechanism, in constant and perfect alignment. Not only does this make for easy assembling at the factory, but in the hands of the user, in daily service, the same alignment may be confidently counted upon. The whole thing spells ease of operation and increase in the power delivered to the rear wheels, which after all, is the desideratum. The transmission affords three speeds and reverse, operating on the selective plan, with a positive locking device which prevents two gears being used at once.



Chassis of Cole "30" Viewed from Above

A self-contained oiling system of this motor makes all other oilers unnecessary. The oil is filled in through the breather by removing the cap of same, the oil gauge just to the left of the carbureter clearly indicates by the rise and fall of the aluminum ball the amount of oil in the reservoir, a full supply of oil is indicated when the ball is near the top of the open slot, and time to put oil into the motor is indicated when the ball is at the bottom of the open slot. A plunger pump connects the oil reservoir with the crank case proper and circulates the oil continually, depending upon the speed of the motor, and maintaining at all times proper level. All excess of oil overflows to the reservoir. A pet cock on the outside, near the top of the pump, when opened will indicate whether or not the pump is operating.

Full floating describes the rear axle, which is mounted upon Hyatt flexible roller bearings, while the I-section front axle has ball bearings to carry the load. Two sets of brakes are fitted, one internal expanding, the other, band brakes on the outside of the brake drum. The wheelbase is 108 inches and the wheels, 32 inch, equipped with 3½-inch tires all around.

FRENCH SPEEDOMETER SHOWS SPEED, TIME AND DISTANCES

By W. F. BRADLEY

PARIS, Aug. 19—Perhaps the only objection that can be brought against an accurate modern speedometer is that it is ephemeral. It gives the speed at which the car is traveling while the car is in motion. When the car stops the pointer drops back to zero, and nothing more is to be learned from the clock-like dial. On certain instruments the maximum speed remains permanently recorded, but even this is a meager record compared with the one supplied by a new European instrument.

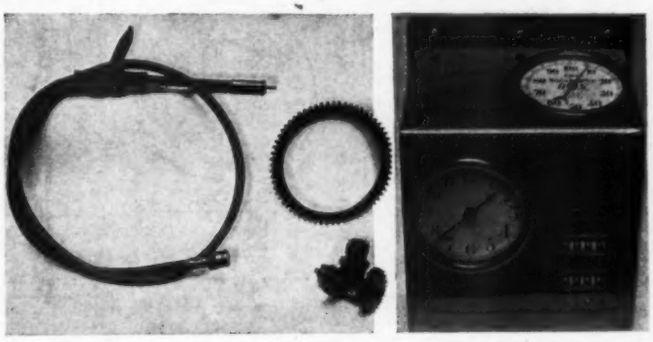
The O.S. register shows the speed at which the car is traveling, in the same way as the usual type of speed indicator, and at the same time prints, on a narrow strip of paper, an account of all that has been done by the automobile from the moment it is taken out of the garage to the instant it is brought back again. If it is desired to know, for instance, what the car was doing between 3 and 4 in the afternoon, it is only necessary to look up the band and everything will be found in black and white: the speed minute by minute; the exact minute when each stop was made, how long the stop lasted, at what time the car started, etc.

The matter is really simple, although it may at first sight appear to be too complicated an operation to be connected with simplicity. Within the brass box containing the speedometer is a roll of paper about one inch in width, which is unrolled from one spindle to another at a determined rate. The paper bears horizontal and vertical lines, these latter representing minutes, fifteen minutes and hours. The band is driven by clockwork mechanism, the passage of each one of the vertical bars representing one minute. The horizontal bars represent each ten kilometers, and run up from ten to 100 kilometers.

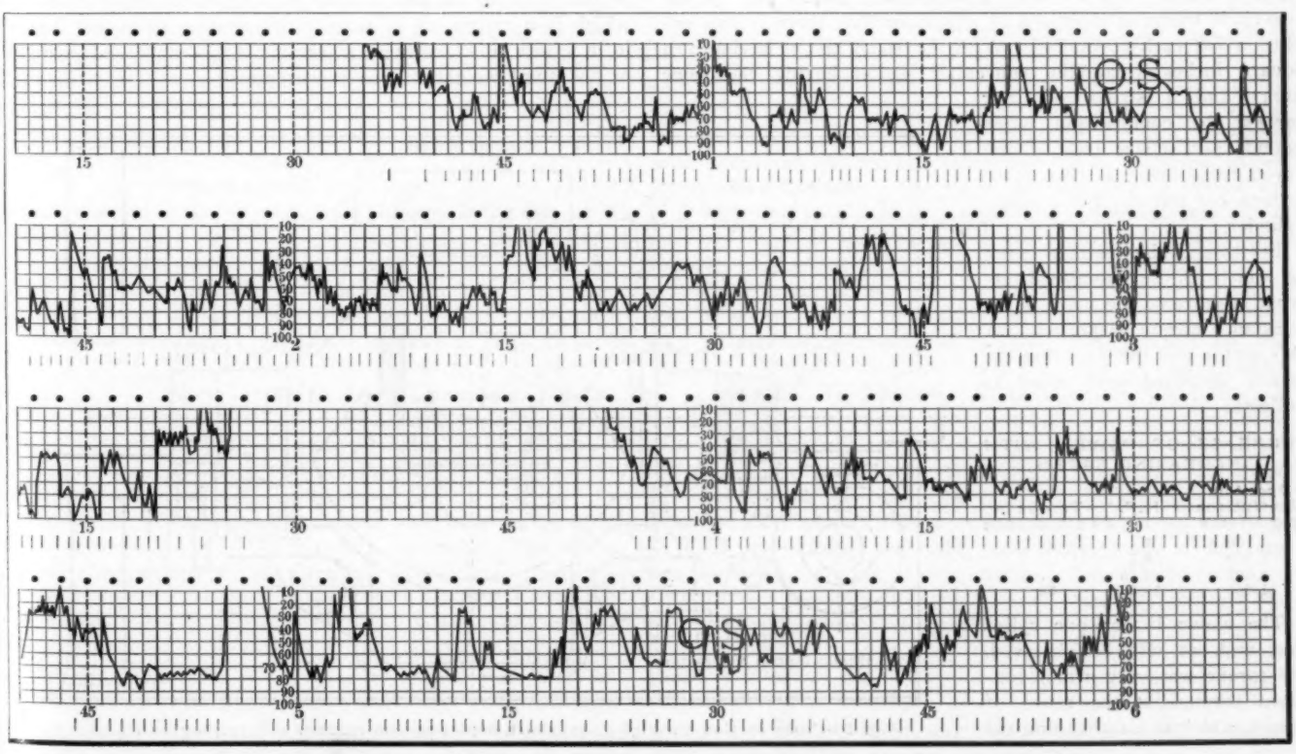
As soon as the car is put into motion and the speedometer, operated in the usual way by flexible cable from a front wheel, starts to act, a stencil begins to trace a line on the moving band of paper, passing under it at the rate of one vertical space a minute. Where the diagram crosses the horizontal lines it shows the speed, and at the vertical lines, the hour that speed took place.

The following is an example of the reading taken on a trial run with a fast touring car fitted with this apparatus. Car started at 12.35. After two minutes the speed rises to 50 kilometers an hour. After three minutes grade crossing and stoppage of one minute. The speed gradually increases to 80 kilometers an hour, with one or two periods where it drops back to 60 kilometers. At 12.45 stop of half a minute, and at 12.59 stop of 45 seconds. At 1.04 the speed is 93 kilometers; at 1.09 it is 95 kilometers; at 1.15 it is 100 kilometers.

The recording bands are supplied in lengths for 12, 18 and 24 hours' duration. They are very easily put into position, and once placed the door of the instrument can be locked, making it impossible for the driver to tamper with the record. So long as the speedometer is doing its duty the permanent record will be made. From a sporting standpoint it is interesting to be able to keep a permanent record of what has been done by the car each day, and for the private owner it is valuable to have some check on his driver when the car is out of his sight. If the instrument can be produced at a sufficiently low price to make it accessible, it should have a great future on commercial vehicles, where a moderate speed and the reasonable use of the brakes are both absolutely necessary for the long life of the car. At present, the cost is rather above the means of the average owner.



Driving Shaft, Gears and Enclosed Box of O.S. Speed Register



Sample Chart as Spoken of in Text, Showing How the Recorder Indicates Time, Speed and Distance

BOURDREAUX-VERDET BALL-BEARING MOTOR

INGENUITY is rarely so well displayed as it is in connection with the application of ball bearings to motors, and that the automobile industry has heard the last word is scarcely to be taken for granted. Some motors lend ease to the application of ball bearings, and the one as here illustrated is in this class. This application, as presented by Henry Hess—Hess-Bright Manufacturing Co.—shows how nicely the Hess-Bright (D.W.F.) type of bearings work in, and it happens to be the case that the motor, aside from the question of ball bearings, is of more than passing interest as a type.

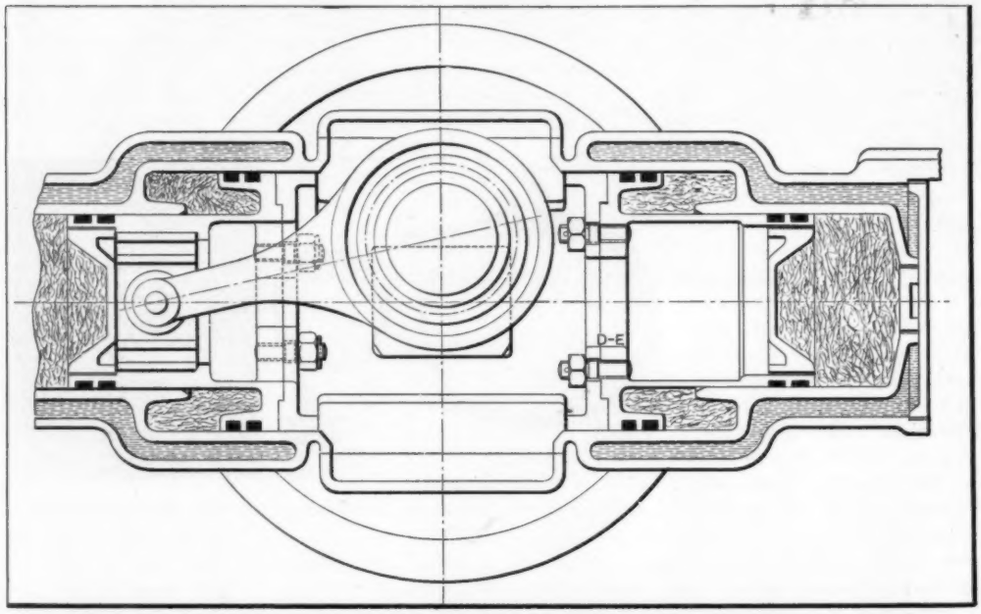


Fig. 1—Cross-section through cylinders, showing concentric piston and thicknesses of walls

As will be observed, the motor is of the concentric-piston type, designed to operate four-cycle, giving results such as the two-cycle motor is supposed to afford, in that there is one explosion for each revolution. With the small piston having 10.2 square inches area (the concentric piston having the same area) and a stroke of four inches, the compression is 80 pounds per square inch, giving seven horsepower, at 1,100 revolutions per minute, for a single cylinder.

But this, in the abstract, is not so much to be wondered at; what is more to the point is the constant torque reported for this motor and the fact that the power increased with speed as follows:

INCREASE OF POWER WITH INCREASING SPEED

Speed in Revolutions per Minute	H.P.	Torque in Foot-pounds
1,100	7	32
1,250	8.5	..
1,425	9.75	..
1,560	10.6	36

The above is for one cylinder, and, as will be observed, the torque was very nearly constant throughout the range of speed, which is a rather unusual performance, especially at the rather high speeds named. The power, in view of the nearly constant torque, increased with the speed almost in proportion, and the weight efficiency of the motor, in view of its lightness, is very good indeed.

Among the mechanical features, as clearly depicted in Fig. 1, and further indicated in Fig. 2, is the connection between the two systems of pistons, and the use of a common connecting-rod. Then, as the same figures show, the crankshaft is short, strong and well balanced, considering the type of motor. The piston construction is a little heavy, which is a matter of moment in motors in general; but in this case, owing to the rigidity of the parts and the great ability of the ball bearings selected, the results are not marred by the weight of the reciprocating parts, and the test, as reported, shows adequately the ability of the bearings, crankshaft and connecting parts.

The cylinders are properly water-jacketed, and the ports, which do not show in the section are sufficiently large to adequately serve the purpose. The construction in general is on a rather high plane, and, on the whole, this is a good illustration of what can be done outside of the conventional; and in view of the present uneasiness among designers, as evidenced by the many new examples which are constantly being presented, it may prove of more than a little interest at this time not only to show the trend from the point of view of ball bearings, but in the direction of the increase in weight efficiency of motors, which is a matter of increasing the number of power strokes, in a given time, without increasing the number of cylinders or the total weight of the power plant.

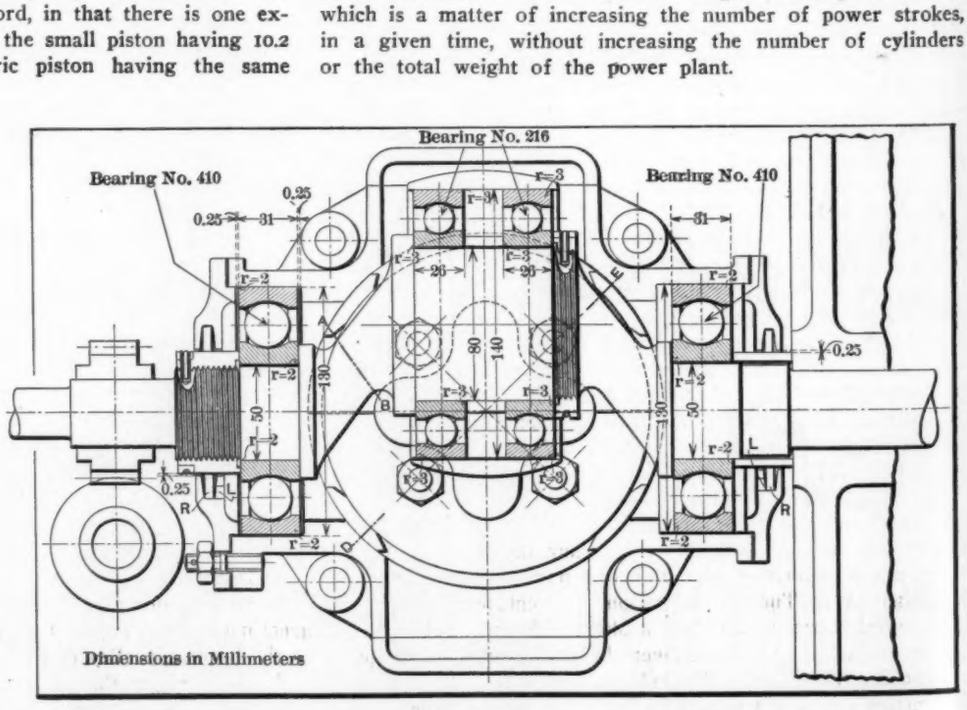


Fig. 2—Cross-section through crankshaft, depicting the manner of applying ball bearings

REGAL COMPLETES ITS TRANSCONTINENTAL

Ames Monument over 8,000 feet above Sea Level

Along the Cliffs, Weber Canyon Utah

Crossing Desert Sands Western Utah.

Fording a Wyoming Stream.

SAN FRANCISCO, Aug. 22—Thirty days out from New York, running time, and with the odometer reading 4031.5 miles, the Regal transcontinentalist ended its strenuous journey at the Regal agency on Golden Gate avenue, in the best of condition and ready to duplicate the trip. The experiences of the party as far as Rawlins, Wyo., have already been described. The final stretch may best be left to the fervid and flowery rhetoric of George D. Wilcox.

"It is a wise provision of Nature," begins the tale of the Regal Xenophon, "that we poor mortals may not know what the future holds in store for us, else our gay start from Rawlins on that bright Sunday morning would have immediately changed into a feeling as of one going forth to slaughter. Heading westward along the tracks of the Union Pacific road we found ourselves in a rough, rolling country of steep ascents, but fairly good road surface." Here he pauses to relate a coyote story in the Seton-Thompson style. Continuing: "Wamsutter, on the eastern edge of the Red Desert, was the noon stop, and after filling the water bags we tackled the road across this barren waste. How we ever got the car through this hundred miles of country we hardly know.

"Bitter Creek, a sluggish alkali stream, rose to a raging flood and tore into the soggy banks like a steam shovel. For forty-eight hours we waited in the old stone stage house, a relic of the Indian days. Tuesday afternoon we ventured forth, and five miles out came to the first washout. We plunged in; the water rose into the body and over the motor, and we stopped in midstream all awash. We held a council of war and devised methods of extraction, which finally were rewarded with success. Across the Green River and southwest into a mighty canyon we plunged, determined to make Granger, 45 miles away, for the night stop. The road improved somewhat, but with Granger only five miles distant, our searchlight disclosed the walls of another washout directly across our path. Its walls were precipices, its bottom fathomless mud. Scouting parties discovered an opening. The Regal was brought up, rushed the ford and sank in a sickening manner in quicksand just at the moment when a safe passage seemed sure. One look was enough; we decided to camp by the car till daylight.

"In that high altitude the nights were bitter cold, and a sage-brush fire, unless constantly fed, is a failure; so all night long we alternately froze and roasted. Daylight and the sun warmed our blood enough to begin the work of rescue, which we accomplished in due time. At Granger we found that we must run north to Oakley, thence south to Evanston, a detour of 75 miles, to avoid more washouts. Night found us at Opal, and in the morning we were off early for Evanston. However, we took a wrong turn, and after 32 miles of "Seeing Wyoming" we were back again whence we started. Again we were instructed, and hitting the right road south, made a fast run into Evanston, arriving at 6 p. m.

"Who can describe the grandeur of this ride through the great natural gateway that opens before us permitting our escape to the beautiful valley in which Ogden is nested?" Mr. Wilcox gallantly attempts the description: "Range on range of magnificent snow-clad mountains pile themselves to the north and south. The Weber River roaring through the narrow gorge gives scant foothold for the wagon road, which, perched now

upon one shoulder, again on the opposite of the cliff, winds under the shadow of the great overhanging rocks. The road is superb. At last, filled with the grandeur and majesty of this wonderful pass, we break through the Devil's Gate and come abruptly into the level and beautiful valley. We were received in Ogden with open arms.

"Ogden is the gateway to the great desert; six hundred miles to the west lies Reno. Saturday afternoon found us again under way after adding to our already overloaded car a supply of provisions, extra water bags and tires. The road led into rough, broken country, and we bumped up and down long hills, thrashing through sagebrush and greasewood wheel high. We crossed the marsh at the head of Salt Lake instead of climbing on the abandoned railroad right of way. Ten miles wide and as white as snow it lies, seemingly as smooth and safe as a cement walk; but the fragile white crust conceals a swamp of pasty, black mud. We hasten on, and finally reach the hills and safety, arriving in Lucin at 9 p. m. Sunday.

Struggles with Sand and Sage-Brush

"We celebrated our entrance into Nevada the next morning with a struggle with fifteen miles of sand. The only possible way that a car could progress was by means of canvas strips on which it must run. We had provided ourselves with several of these, each 100 feet long and two feet wide, and we spent the entire day getting into Montello, 20 miles, in this manner. We left for Wells the following day and again tackled the desert. Don't imagine the Nevada desert a smooth, sandy plain—far from it. It's climb up and down all day long, and the grades are wonders for steepness and roughness.

"On Friday we reached Lovelock at 3 p. m., and thence bowled along for 20 miles, skirting the northern edge of the alkali desert, into which the Humbolt River so mysteriously sinks. Westward, as far as we could see, the white, salt-incrusted plain stretched to the setting sun. Southward the mountains, and the railway at their base, receded into the dim, hazy distance, and to the north the broken foothills lay barren and desolate. We spun along, but how seemingly slow the progress; it is as though we remained in the very center of this deserted land and the wheels revolved under us idly." Here the faithful reader encounters a marvelous tale of a band of wild horses, led by a "magnificent white animal." Hardly had these disappeared, when as darkness dropped down, we realized that without water and food we were lost in the dreaded sink. The car was traveling on a thin crust of sun-baked mud, under which the treacherous black ooze threatened to mire us. At last we reached the foothills and encountered a well-defined trail. We drove into Leet's Station in time for the savory ham and eggs of the Sunday morning breakfast.

"From here we followed the Southern Pacific into Wadsworth, 20 miles, and arrived in Reno, 35 miles from Wadsworth, at 2 p. m., where we enjoyed the luxury of a bath in a real tub and sleep in a real bed. Reno, with its electric cars, paved streets and modern hotels, looked bigger than New York to us. On the morrow, rested and refreshed, we started southward on the last lap of the 'long trail' to the Golden Gate.

Crossing the Sierras into California

"The road wound through a narrow canyon along the eastern slope of the mountains, skirted the shore of beautiful Washoe Lake, and then, ascending a high divide, dropped us down suddenly into Carson City. We rushed through the broad main street and after a run across country over a superb road we reached Wally's Hot Springs. Six o'clock in the morning found us away, and turning directly into an enormous canyon, we confronted the 'Grade.' The road was ankle deep in equal parts of fine sand and disintegrated granite in which the wheels sink to the rims, and it ascends the mountain in a series of great sweeping switchbacks winding, snakelike, back and forth up a mighty spud, so deep that in a quarter of a mile's travel you look down 200 feet on the road directly below you over which you have just come.

"We start abruptly down the Pacific Slope among giant fir trees and come out on the shores of beautiful Lake Tahoe at lunch time. The lake, blue as the sky above, with its setting of snow-clad mountains, glimmers like an immense topaz 7000 feet above the sea. The road, built and maintained by the State, is a credit to the commonwealth. Its cost must have been immense, hewn out of the cliff side as it is. We go down, down, down, in a seemingly unending succession of curves, now under overhanging cliffs, now buried in the semi-darkness of a pine forest. After a hurried meal at Placerville, we headed northwest and reached Sacramento at 1 a. m., having covered 164 miles.

"We get away on the last lap in great style next morning. Down through Stockton and Livermore we fly to Oakland. We finish the great run with a final rush up Market street, in our hearts and minds nothing but gratitude and pleasant recollections to those and of those who so kindly contributed to our success and pleasures en route."

Wearied by the strait confines of prose, Mr. Wilcox concludes his recital with a burst of verse in the true epic mood:

"We have lived an age in a half-moon wane;
We have seen a world; we have chased the sun
From sea to sea—but the task is done.
We here descend to the Great White Main,
To the King of Seas with its temples bare,
And a tropic's breath on brow and hair."

THE AUTOMOBILE CALENDAR

Shows, Meetings, Etc.

Sept. 21-23	Cleveland, Good Roads Convention, American Automobile Association.
Nov. 6-13	Atlanta, Ga., Auditorium-Armory, National Automobile Show, auspices of National Association of Automobile Manufacturers, Samuel A. Miles and Alfred Reeves, General Managers, 7 East 42d Street, New York City.
Dec. 31-Jan. 7	New York City, Grand Central Palace, Tenth International Automobile Show; American Motor Car Manufacturers' Association, with Importers' Automobile Salon and Motor and Accessory Manufacturers. Alfred Reeves, General Manager, 505 Fifth Avenue, New York.
Jan. 8-15	New York City, Madison Square Garden, Tenth National Show, Association of Licensed Automobile Manufacturers.
Feb. 5-12	Chicago, Coliseum, Ninth Annual Automobile Show, National Association of Automobile Manufacturers. S. A. Miles, General Manager.
Feb. 22-26	Kansas City, Mo., Convention Hall, Fourth Annual Automobile Show.

Races, Hill Climbs, Etc.

Aug. 27-28	New York City, Brighton Beach, 24-Hour Race, Motor Racing Association.
Sept. 6-11	Lowell, Mass., Automobile Carnival, Lowell Automobile Club.
Sept. 10-11	Baltimore, 24-Hour Race, Motor Car Racing Association of Maryland.
Sept. 15	Denver, Col., Start of Flag to Flag Endurance Run to Mexico City.
Sept. 20-22	New York, Second Annual Run Around Long Island, New York Automobile Trade Association.
Sept. 21	Riverhead, L. I., Long Island Derby, Motor Contest Association.
Sept. 21-29	Washington-Boston and Return, Munsey Reliability Run.
Oct. 7	Philadelphia, Second Annual Stock Chassis, 200-Mile Race, Fairmount Park, Quaker City M. C.
Oct. 16	Denver, Col., Start of "Flag to Flag" Reliability Run, G. A. Wahlgreen, Manager.
Nov. 9	Atlanta, Ga., Track Races, Atlanta Automobile Association.
Dec. 29-30	Philadelphia, Fourth Annual Midwinter Endurance Contest, Quaker City Motor Club.

What the Clubs Are Doing These Days

ROCHESTER CLUB HAS LARGE MEMBERSHIP

ROCHESTER, N. Y., Aug. 23—The Automobile Club of Rochester is fast becoming one of the largest automobile organizations in this country. With the additions at its last election the roll now includes over 700 names and there are more applications on hand at present. It is the hope of the members of the body that this club may be soon counted upon the very largest in this respect. Considerable activity along lines of good roads, legislative and touring work has been outlined for fall campaigns.

The recent fifth annual orphans' day was the most successful ever held by the club. There were 585 children and 50 attendants as guests for the day and 172 automobiles in which to entertain them. The passengers were secured at 1 o'clock in the afternoon from the various asylums, the parade formed and ride around the city taken as a preliminary to the rest of the day's fun. The line of cars was preceded by a motor-cycle police squad and a large truck carrying a band. At Ontario Beach Park every concession was thrown open and refreshments distributed freely. The children from each home were assigned certain colors and their cars decorated accordingly, so that loading and unloading was greatly facilitated. This was an arrangement made by Secretary Bert Van Tuyle.

NEW AUTO CLUBHOUSE AT WILDWOOD, N. J.

WILDWOOD-BY-THE-SEA, N. J., Aug. 21—Although but six weeks old, the North Wildwood Motor Club is a healthy infant, as was evidenced by the fact that to-night it had a "house-warming" in its new quarters, at the junction of Central boulevard and Seventeenth street. The clubhouse is a cosy and comfortable structure, having two-story porches and a roof-garden, besides accommodations for such of its members as may desire to use the clubhouse as headquarters during their stay in the resort. The membership list contains the names of many prominent in automobile and newspaper circles in the Quaker City. W. Wayne Davis, manager of the Matheson branch in Philadelphia, is president; the Mayor of North Wildwood, Harry C. Wheaton, is vice-president; William C. Richardson, treasurer; William E. Young and E. M. Omensetter, secretaries, and Charles Winters, counsel. Plans are in progress to hold a meet on the Central Avenue speedway before the close of the present season.

EAST ST. LOUIS NOW HAS A CLUB

EAST ST. LOUIS, ILL., Aug. 23—With a charter membership of 22, the Automobile Club of East St. Louis has been formed in this place, as a direct result of an accident to a boy a few days previous. The traffic rules have been so lax and children so foolhardy on the street that these autoists banded together to secure some action from the local council. It will seek to have the children prevented from running at large on the business streets, and to make it a misdemeanor to throw bottles, glass, tacks and similar articles out where auto tires may be affected. The following officers were elected: President A. B. Sager; secretary and treasurer, James E. Combs.

QUAKERS PLAN RECEPTION FOR MUNSEY TOUR

PHILADELPHIA, Aug. 23—When the Munseyites arrive here on September 21, en route from Washington to Boston, they will be taken in tow by the Quaker City Motor Club, whose house committee, under the leadership of Frank Hardart, Sr., and A. T. James, will entertain the visitors with a smoker and concert in the huge banquet hall of the Hotel Walton. "Doc" Overpeck, the Quaker's scout, has been named as one of the committee of technical sharps to look over the cars after the run.

WASHINGTONIANS PREPARING FLORAL PARADE

WASHINGTON, D. C., Aug. 21—The automobile floral parade of the Chamber of Commerce, assisted by the Automobile Club of Washington, scheduled for September 30, and the Munsey tour to Boston and return, September 21-29, are two projects that are attracting a great deal of interest among local automobilists. The floral parade is expected to be one of the greatest events of the kind ever held in this section. The announcement that President Taft's big White steamer would probably head the parade has caused it to assume national importance. It is also expected that the several members of the Taft cabinet will enter their cars, each of which will fly the departmental flag of its chief. Various other cars owned by the Federal Government will make up the balance of the Government section, and then will come the Munsey tourists. The flag-decorated cars will compose the next section, followed by the floral decorated cars. The last section will be devoted to commercial vehicles. Handsome prizes have been offered, including a sweepstakes cup valued at $600.

NEW ROCHELLE AUTOISTS FORM CLUB

NEW ROCHELLE, N. Y., Aug. 23—Marked enthusiasm for the new organization accompanied the formation of the Automobile Club of New Rochelle on Thursday evening. With about 250 automobile owners in this city, the charter membership of the club is nearly 50, and it is expected that this will increase by leaps and bounds in the near future. The poor condition of some of the streets, and certain conditions which have arisen to bother autoists, led to the call for the local body. It is planned to begin at once upon plans for a clubhouse and garage, and the constitution permits the club to take active part in aeronautics, a subject in which many of the members are particularly interested. The officers elected are: President, E. T. Birdsall; first vice-president, W. B. Ogden, Jr.; second vice-president, J. A. Schofield; secretary, F. M. Carpenter; treasurer, F. D. LeCount; governors, A. F. Bradley, T. N. Benedict, G. W. Sutton, E. Eckart, Robert Fox and G. A. Peck.

SUCCESSFUL ANNUAL TOUR OF WINNIPEGGERS

MINNEAPOLIS, MINN., Aug. 21—Ten cars made the run here via Grand Forks and Fargo, in the annual tour of the Winnipeg Automobile Club last week. Pathfinder McLeod utilized a unique method of marking the course, by placing a funnel through the footboard of the car and using ordinary white beans instead of confetti.

The tourists were entertained by friends in St. Paul and Minneapolis for two days, and returned via the same route.

NORFOLK ORPHANS GIVEN AN OUTING

NORFOLK, VA., Aug. 14—Under the auspices of the Tidewater Automobile Association, 115 little orphan children were given an outing on Wednesday. Twenty cars were donated for the occasion and the three institutions in the city furnished the occupants. They were taken to Ocean View, where the amusements were thrown open to them, and later a lunch provided.

NEW CLUB FORMED IN ABILENE, KAN.

ABILENE, KAN., Aug. 21—The Abilene Automobile Club was organized in this city this week with the following officers: President, C. M. Harger; vice-president, F. H. Forney; secretary and treasurer, J. T. Nicolay. All the towns of the county will be canvassed for members, and inasmuch as good roads will be the object of the body, farmers will be asked to join.

THE AUTOMOBILE

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RACING A PROBLEMATICAL SPORT

Disastrous and disheartening was the initiation of the Indianapolis motor speedway, the fatalities supplying ammunition to those who believe that high speed in automobile competition has nearly reached its conclusion. But, apparently, the end is not yet for contests of this character in America, and, while the element of danger is ever involved, a lesson can be learned from the Indiana race-course which should prevent a recurrence of such an unfortunate innings of sport. This lesson has been taken to heart by the builders themselves, who keenly feel the regrettable opening.

In order to keep faith with the public, as well as with the contestants themselves, the promoters of the stupendous undertaking at Indianapolis rushed their construction to a completion which left much undone when the workmen were driven from the course to make way for the impatient participants in the racing. The track, in its hastily prepared condition, could not withstand the horde of high-powered speed craft, and soon the surface had disintegrated in such manner as to make it positively dangerous. Furthermore, the distances in the feature events were too great for track contests wherein only one driver to a car is employed.

Human endurance has its limits, and men should not be encouraged to exert themselves beyond their capabilities, either in the pursuit of glory or gold, or both. These defects can be avoided on another occasion, though it must always be borne in mind that high-speed automobile racing is not a lawn tennis match or a genteel kind of game, which means that there will be occasional sacrifices to this fierce god of sport, the supporting of which rests entirely with the manufacturers, not a few of whom are now asking themselves whether it pays.

The promoters of the great undertaking at Indianapolis were actuated by a desire to excel anything of the kind ever before attempted in this country, and the seeking of profits unquestionably was secondary, for none believed that such a hazardous venture would be successful financially in a city of moderate size. The wish was to supply a course as safe as can be obtained for mile-a-minute and faster racing. The first inclination, after the frightful introductory, was an abandonment of the entire project, but a revised judgment has brought forth the announcement that $100,000 additional, if necessary, will be utilized in providing all safeguards possible to drivers and spectators.

Here is expressed the sincere hope that no more lives will be cut short in the racing at Indianapolis; but one can never lose sight of the fact that high-speed racing in its sanest aspect involves a risk perhaps only exceeded by the spectacular aeroplane in its abrupt entrance upon the scene; and the man of the air may assert that his sport is even less perilous than that of the fellow who hurtles himself around a track or over winding roads in a machine tested to its utmost endurance, remembering that a thing is only as strong as its weakest part.

DEVELOPMENT IN BODY DESIGN

Improvement in automobile body design has fully kept pace with improvement in the motive power and running gear. We can all remember the bulges and scrolls of the "Roi des Belges" so popular five years ago, which enjoyed the triple distinction of being offensive to the eye, painful to the spinal column, and back-breaking for the unfortunate chassis. Our newer body work is simple in outline and decoration; it relies for effect on proportion and the arrangement of masses. Its simple lines permit a lighter and more mechanical construction, and the graceful reverse curve beloved of the artist no longer catches the unhappy passenger in the small of the back. The depth of the seats and the foot-room have been worked out with some regard for human anatomy; this done, the body builders have made that world-old discovery that utility is the larger half of art.

The most significant development has been that in "baby" and close-coupled tonneaus. The remarkable popularity of these designs indicates that the desire for excessive seating capacity is no longer dominant. A most sensible and logical body, at least in respect to size, was shown on a foreign car in one of the New York shows, but failed to receive the attention that it deserved. It was of the close-coupled type, but the rear seat was divided so as to provide comfortable accommodation for two persons. In addition, there was a single folding seat in the middle, instead of the customary pair. This arrangement seems ideal. Four makes a good party; and, if there should be a fifth, he would be at least as comfortable on the auxiliary seat as in the middle of the usual tonneau seat. Everyone forced to occupy that seat will join in a prayer for its early abolition.

ATLANTA'S NATIONAL SHOW PLANS ANNOUNCED

NEW YORK, Aug. 23—First of the forthcoming national automobile shows is that at Atlanta, and the entire South is interested in it. The exhibition is welcomed there by tradesmen and owners alike as a means of stirring additional enthusiasm for this method of locomotion, and of further awakening that section of the country. The automobile is already working wonders toward opening up the States which have lain idle for years, and with the coming of this event of such wide importance a strong economic result is expected. It was really this event which suggested to the promoters of the New York to Atlanta endurance contest the idea of running down to the exhibition, and thus arouse enthusiasm for good roads.

The Southern show will be held in the Auditorium-Armory, and by the removal of various partitions there will be 65,000 square feet of floor space available. The structure is one of the largest buildings for exhibition purposes in that section of the country, and, under the ownership of the city of Atlanta, has been used for some of the largest of conventions. The show will be held from November 6 to 13, under the management of Samuel A. Miles, general manager of the National Association of Automobile Manufacturers, and of Alfred Reeves, general manager of the American Motor Car Manufacturers' Association.

The applications for space and diagrams of the floor arrangement have been mailed to the makers of automobiles and accessories, and to be considered in the first allotment, these must be returned to the headquarters of the N. A. A. M., No. 7 East Forty-second street, New York, by September 4. No application received after that date will be taken up until the others have been cared for. The first allotment will take place September 8.

Those working in conjunction with Messrs. Miles and Reeves are Asa G. Chandler, president of the Atlanta Chamber of Commerce; John S. Cohen, Clark Howell, E. W. Gans, S. C. Dobbs, C. R. Ryan, E. M. Hanson, J. T. Fitten, and others, all of Atlanta.

VANDERVOORT EXPLAINS HIS PROTEST OF HOWER AWARD

NEW YORK, Aug. 24—After refraining from discussion of the subject the past few weeks, W. H. VanDerVoort, president of the Moline Automobile Company, has consented to tell the facts regarding his protest against awarding the Hower trophy in the recent Glidden tour. Mr. VanDerVoort does not wish it to be thought that his protest was merely on the matter of carrying a tail-light, and in his statement he explains where, in his judgement, a proper enforcement of the rules would have given the Hower trophy to the Moline. Mr. VanDerVoort says:

"I dislike very much to be involved in a protest of any sort, but many of the contestants in the tour almost demanded it, and I think my interest in the Moline and in fair play warrants it.

"Feeling that the text of my protest against the finding of the technical committee in the final inspection of the Glidden Tour cars at Kansas City should emanate from the office of the chairman, Mr. Hower, I have until this time refrained from giving out same.

"Noting, however, that an erroneous report has gone out to the effect that Moline car 101 was protesting the decision on the grounds of Pierce car 108 not carrying a tail-light, we feel that this impression should be corrected. Pierce car 108 did carry its tail-light, and my protest is based upon the fact that this tail-lamp was demolished and the bracket considerably bent.

"Penalties were provided for deterioration, and, according to the rules, car 108 should have been penalized to the extent of the price of a new lamp and the labor required to straighten the tail-lamp bracket. Moline car 101 was required to light its oil lamps in proving condition. This would have been impossible with car 108, as the tail-lamp was entirely inoperative.

"On the basis of material and labor in repairing bracket, and replacing lamp, it would alter the final score in my favor.

"I have no criticism whatever as to the findings of the committee upon penalties which were imposed upon Moline entry 101, and while the crushing of the tail-lamp and the bending of its bracket may appear trifling, I feel that the tightening of the three spring clip nuts and the furnishing of one ¼x1-inch cap screw, and one ⅜x1-inch step bolt, upon which our penalties were levied, are, from the operative standpoint, of less importance.

"In the case of the protest against the perfect score Glidden car, the public has been led to believe that this was based upon the technical fact that the car did not carry its tail-lamp over a portion of the tour. While this is true, and under the rules should have been penalized, back of it all lies the fact that these lamps were purposely removed in order to prevent the breaking off of the bracket and the tool box, as happened to Pierce car 109 during the tour. As it is only fair to assume that had the tail-lamp been left on the two touring cars, they would both have suffered the same fate as befell the two roadsters."

NEW CONNECTICUT LAW IS AMENDED

HARTFORD, CONN., Aug. 21—When Governor Weeks signed the new automobile law, as stated last week, he did so with the provision that certain changes be made in it by amendments. These have been passed this week by both houses of the legislature and make some important alterations in the statute. The principal change is that in regard to the license fees, which have been changed from certain amounts upon different classes of power to a flat rate per power. Cars of less than 25 horsepower will be taxed at 50 cents for each horsepower, while those about the 25 figure will be rated at 60 cents each. The factories will have to pay only one dollar for each machine tested upon the roads, instead of double that amount. The proposed amendment that automobilists be required to stop when approaching street cars loading or unloading passengers was not included in the bill, thus allowing the three-miles-an-hour clause to remain.

COLUMBUS, O., DESIRES ROAD CONVENTION

COLUMBUS, O., Aug. 23—The Columbus chamber of commerce is making every effort to secure the next convention of the American Roadmakers' Association, which will be held in October. This body of highway builders is composed of some of the most prominent men in the country interested in good roads, representing every State. If the meeting is brought to this city it is likely that it will be held in connection with the annual gathering of the Ohio Good Roads Federation, October 27 to 29.

JONES SECURES INJUNCTION AGAINST I.A. L.

NEW YORK, Aug. 23—The Jones Speedometer Company announces that it has secured a restraining injunction in the U. S. Circuit Court of the Western District of New York, against the International Automobile League of Buffalo. This forbids the sale of Jones speedometers or parts at less than factory list prices.

AUTOISTS NOW LOOK TO LOWELL'S CARNIVAL OF SPEED

LOWELL, MASS., Aug. 23—With the termination of the races on the Indianapolis speedway, the attention of the automobile world is focussed on Lowell and the Merrimac Valley course as the next scene of competition in speed. Stock cars will have complete sway in the national events which will feature the carnival, starting on Labor Day and lasting throughout the week, and as the dates approach little else is thought of in this section. For many weeks the preparations have been going on, the course being treated, railroad facilities improved, and now, chief of all, the racing men are on their way with their swift machines. The committee in charge of the multifarious plans is about ready to state that the entire arrangements have been completed.

Work on the 10.6 mile circuit is nearly at an end, and only enough will be required to keep it in excellent condition for the events. The grand stand is receiving its finishing touches, as is also the pontoon bridge across the river, and the parking spaces have been staked off opposite the big stand and on the boulevard. It has been the aim of those in charge to have all the preliminary work done before the great majority of the ante-race crowd arrives. Many of the racing teams have secured their quarters, and it is advisable for everyone who intends to visit the city to reserve rooms well in advance. Those in charge of the matter have the location of 500 rooms for visitors on their lists, and will gives the names of the places upon application. Additional space is being secured daily, for it is felt that all will be needed. Preparations are made to include a crowd of from 125,000 to 150,000, and an endeavor will be made to keep down any tendency toward exorbitant charges on the part of the local dealers.

Last year, with 80,000 spectators along the course, 300 patrol guards succeeded in preventing accidents and in keeping the course well policed. During the big events next month the number will be increased to 500, of whom 400 will be local militiamen, and the others will be from the local police force. The men will be scattered around the route as last year, with the greatest number where the crowd is likely to congregate, and will be given instructions to keep people off the road at all cost. Wire fence has been used in some places to assist the police, and rope will be ready to stretch in case of any unusual gathering at some now unsuspected vantage point.

The latest entry is a new 50-horsepower Simplex car, a duplicate of the one with which George Robertson won the recent 24-hour track race. Its owner and entrant is Daniel Shea, and he is desirous of securing Robert Hilliard to handle it in the big race here. Hilliard won the light car race at Savannah last fall, and has been prominent in many contests of speed and endurance. The list of entries now includes the following: Three Maxwells, a Moon, an Allen-Kingston, a Columbia, an Isotta, a Mercedes, a Bergdoll, two Appersons, an Alco, two Renaults, Knoxes, Stoddard-Daytons, Benz and Rainiers. Walter Christie is expected to have his new 100-horsepower front wheel drive here for the straightaway speed trials on the day between the small chassis event and the big one for the Lowell trophy. The entries are still being received, so that a wonderful field of starters is expected.

SPECIALIZED CONDITIONS FOR FLAG TO FLAG CONTEST

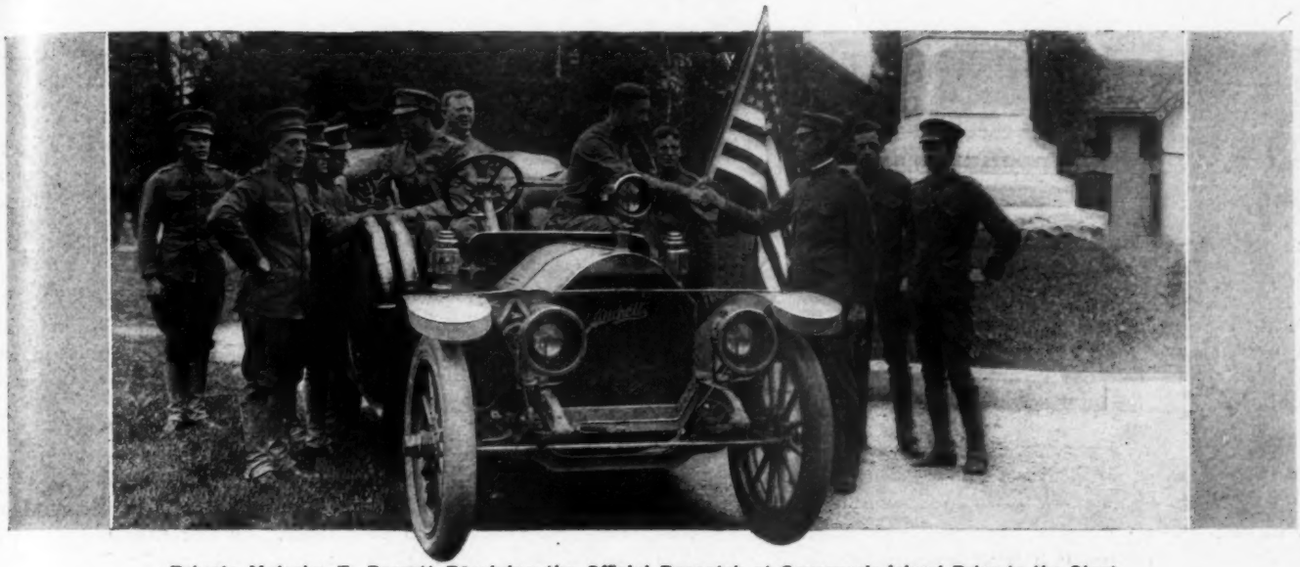
DENVER, COL., Aug. 21—From Denver to Mexico City is the route over which the tourists in the Flag to Flag contest will be required to travel during the last week of October and the first half of the month of November. The date of the start has been announced as October 25, and that of the finish sometime in the week of November 15. Road conditions are such that the exact time can be figured but approximately, although the rules as announced give the schedule for the competition while under the Mexican banner. The contest is for the George A. Wahlgreen trophy, conducted under the sanction of the A. A. A., and with rules which are much similar to those of the 1909 Glidden tour. Necessary alterations have been made to conform with circumstances that will probably arise across the border. In addition to the prize offered by Mr. Wahlgreen for touring cars will be another for runabouts.

The rules have recently been issued, and chief interest in them is taken in that section which governs the contestants from Eagle Pass, the last city in this country, to the capital of the Aztecs. The regulations previous to the former point are well understood, including penalties for lateness at night controls, the use of observers throughout the daily trips, penalizations for repairs and adjustments, and a final examination. To those autoists, however, who are accustomed to daily control periods of from seven to perhaps ten hours, the schedule of the Flag to Flag competition will be a surprise. From Eagle Pass to Torreon is a long run, and the schedule is five days and six hours for the largest cars, with additions of two hours each for the succeeding five sections; the next run is to Zacatecas, and two days and one hour is the time allowance. The third run can be figured out in plain hours and minutes, for it is to the City of Aguas Calientes, and the running time will be eight hours; then comes another long journey over the shifting roads, en route to the City of Celaya, with two days and 30 minutes schedule; the fifth control will be in the City of San Juan del Rio, with one day and 30 minutes; the sixth will be at the City of Tula, the schedule being another day and 30 minutes, and the final run must be made into the City of Mexico in seven hours and 10 minutes.

The classification has been changed somewhat in these rules, giving an extra division, the prices which separate them now being: $4,001 and over; $3,001 to $4,000; $2,001 to $3,000; $1,251 to $2,000; $851 to $1,250, and $850 and under. The daily schedule before reaching the border will give a 20-minute handicap over class 1 when the running time is nine hours or more, 15 minutes when it is between seven and a half and nine, and 10 minutes when it is less than seven and a half. In Mexico there is considerable difference in the allowance, given in detail in the regulations.

There will be a pacemaker from San Antonio, which will precede the tourists by one or two days. After leaving the United States a number of the regulations in regard to the operation of the cars will be changed. For instance, when tires have to be repaired the engine may be stopped, but there will be no penalty for work in connection with the pneumatics. Another alteration is that mufflers need not be carried, and still another is that if one contestant borrows parts from another contestant or a free-lance car in the tour, it will not be disqualified. When a machine reaches a control of more than one day's duration it may be immediately checked, and continue towards the next stop.

The problem of hotel accommodations is giving the managers some concern, for the plan to have a Pullman train accompany the travelers does not adequately fill the requirements, because for long distances the cars will be away from the railroads. The hotels in the various control cities are able to care for the party, but it would be necessary to camp out on the plains at times, and to carry sufficient food along. It has been thought best to allow those who will participate in the event to decide about the train or hotel arrangements.



Private Malcolm E. Parrott Receiving the Official Despatch at Governor's Island Prior to the Start

MILITARY MITCHELL BEGINS ITS TRANSCONTINENTAL TRIP

NEW YORK, Aug. 23—Bearing a despatch from Major-Gen. Leonard A. Wood, commanding the United States Army, Department of the East, to Major-Gen. John F. Weston, commander of the Department of California, the 1910 Mitchell "Ranger" started from this city for San Francisco on Thursday afternoon. Clad in the regulation army khaki, with canteens, haversacks and revolvers hung on the sides of the new touring car, were Private Malcolm E. Parrott, of the Tenth Regiment of the New York National Guard; Frank X. Zirbes as driver, and Lieut. B. B. Rosenthal, the three members of the party. With the plan of a definite schedule to follow, about 3,693 miles to cover, and probably much more, the new car is essaying one of the most strenuous trips ever attempted. No records will be aspired to, for the car will deviate from the direct route a number of times in order to visit army posts en route.

To New York automobiledom, however, there was wide interest in the Mitchell car itself, when it first appeared on Broadway. The entirely new line of the 1910 product of the Mitchell Company was a surprise, and General Manager Gilson was congratulated many times upon the pleasing style of the newcomer. The radiator, and consequently the hood, are materially different in shape from other Mitchells, and the alteration has included the body also. It was well prepared for the long journey before it, rope, shovel, pick and other tools being in the equipment.

Preliminary to the actual start was a trip to Governor's Island for the official despatch, and at exactly noon the party, acccompanied by a number of Mitchell cars from the Mitchell branch, and a delegation of private owners, assembled at Columbus Circle to witness the beginning of the rigorous jaunt. Private Parrott carried a large flag presented to him by Capt. W. L. Burnett, of his regiment, as well as the pennant of the Hudson Valley Automobile Club of Poughkeepsie, of which he is a member. The route selected is that most generally taken, via Albany, Buffalo, Chicago and Omaha.

LONG BRANCH RACES IN THE TWILIGHT

LONG BRANCH, N. J., Aug. 21—Lengthy delays, while horses were cantering up and down Ocean avenue this afternoon, interfered with what might have been a very successful series of one-mile straightaway speed trials. As it was, the cars did some high-speed work, but the hundreds of automobile parties from neighboring Jersey coast resorts tired of waiting for the start and returned to their homes. It was 5:45 P. M. when the automobiles were called to the tape, and they did not finish the heats until well into the dark, with their gas lights doing valuable service.

Some fast cars had been brought here for the event, among them being Heitemeyer's Simplex, Allen's Allen-Kingston, Rainier's Rainier, Roebling's Roeblink, Lescault's Palmer and Singer, and Burnham's Lancia-Fiat racer. The stock cars had matters their own way, in spite of the fact that there were a number of special types on the course. The Simplex took the honors of the evening for the fastest time, twice covering the mile in 52 seconds, a rate of 69.2 miles per hour, winning the $4,001 and over class, and the free-for-all. The big 120-horsepower Roebling was second in point of time, its record being :53, in the open class. Walter C. Allen's A-K captured the $3,001 to $4,000 division, in 55 seconds, with the P. & S. one second behind. Other class winners were: $2,001 to $3,000, S. P. O., 59 seconds; $1,251 to $2,001, Buick, 1:09; $851 to $1,250, Cadillac, 68 seconds. The A-K repeated its 55-seconds performance in the free-for-all, but a little behind the Simplex and Roebling.

CALIFORNIA TO HAVE 300-MILE RACE

SAN FRANCISCO, Aug. 20—It has been definitely decided that a 300-mile road race will take place during the three days of the Portola Festival. The date has been set for Saturday, October 23, and the event will be run over the Foothill Boulevard, near San Leandro. The Automobile Club of California will have the management of the event, and the supervisors of Alameda County have given their sanction to the event. The course is about 21½ miles long, having two long straightaways between which are many short turns. The cars will be divided into two classes, Class A of cars with greater than 300 inches displacement, and Class B for those under this measurement. The main trophy of the day will be the Portola Cup, which is valued at $5,000. The driver of the winning car in Class A will receive a purse of $800, the second best, $500, and the third, $300. In Class B the winner will get $250, the second, $150, and the third, $50. The winning car in this class also will be awarded a cup, valued at $1,000. Extrance fee will be $150, to be returned at start.

SECOND RUN AROUND LONG ISLAND

NEW YORK, Aug. 24—The second annual endurance run of the New York Automobile Trade Association around Long Island will be held on September 20, 21 and 22. The first night stop will be made at Shelter Island, the cars being parked at Greenport, and the second at Good Ground or Southampton.

LATEST NEWS FROM THE CAPITAL OF MOTORDOM

DETROIT, Aug. 23—When Henry Ford and his associates decided to purchase the old Highland Park racetrack and grounds, in the northern part of the city, and erect thereon what is said to be the largest single building in the world devoted to the manufacture of automobiles, wise ones in the industry shook their heads and averred that the Ford Motor Company had made a mistake in moving so far from the established manufacturing districts. Despite predictions of disaster, the Ford Company went ahead with the project, and now, just as it is moving into its new plant, comes the announcement that a new industrial district will be developed in the immediate vicinity, in which the automobile and its accessories will hold full sway.

Cramped for space in its present quarters that, at the outset, were considered adequate for all time, the Brush Runabout Company has purchasd twenty acres of land on the Grand Trunk Railroad, a short distance from the Ford plant, and work is already under way on four large buildings which will form the nucleus of a group that will eventually house all the local Briscoe enterprises, and may mean the addition of another large plant to Detroit's auto colony.

Frank Briscoe is president of the Brush Runabout Company, whose business has been growing at an enormous rate. Some time ago the Brush people transferred their business from the plant of the Briscoe Manufacturing Company, and now are compelled to put up a plant of their own, in order to meet demands. The Briscoe Manufacturing Company's trade in radiators, in which field it is one of the largest in the country, has grown to such proportions that larger quarters must be secured. The present plant will be added to, and it is the intention, as soon as the new Brush factory is completed, to start work on buildings for the Briscoe Manufacturing Company adjoining.

Quite the most interesting bit of gossip in this connection has to do with the establishment here of a factory by the Maxwell-Briscoe Company, which now has plants at Tarrytown, N. Y.; Providence, R. I., and Newcastle, Ind. Options are held on some forty acres of ground in addition to that already purchased, and it is known that the question has been discussed favorably by the Maxwell-Briscoe Company.

"Any definite announcement regarding such a move must come from my brother, Benjamin Briscoe, of the Maxwell-Briscoe Company," said Frank Briscoe in answer to an inquiry. "It is true that the matter has been discussed at length, and that Detroit has been looked upon with favor. Further than that, there is nothing to be said at present at this end of the line."

Associated with the Brush and Briscoe companies in the new district, it is understood, will be several parts and castings companies. The present plant of the Brush company will, under the new arrangement, be devoted to the manufacture of bodies.

A stock company, capitalized at $300,000 and with ample funds in reserve, has been formed to take over the business of the Blomstrom Motor Company, to continue the manufacture of Gyroscope cars. It is probable that the plant will be established in Adrian, Mich., as a majority of the stockholders in the new concern reside there.

FACTORY BUILDING OBSTACLES OVERCOME

DETROIT, Aug. 23—Morgan & Wright's huge tire and rubber goods factory, located on the banks of the beautiful Detroit River, from the standpoint of scenery, light, air and water supply, is probably one of the finest factory sites in the country. It is doubtful, however, if these advantages, particularly the abundant water supply, appealed to the engineers in charge of installing the recent additions to the tire building equipment.

The steam presses in which the tires are cured are so ponderous that it is necessary to go down to bedrock to get a proper foundation for them. As the excavations proceeded below the level of the river, water oozed through into the shafts to such an extent that it was necessary to install a big centrifugal pump, and run it night and day to permit of continuing the operations. Even then the men were compelled to work up to their waists in water most of the time. In spite of these difficulties it is expected that the new equipment will be ready for operation inside of a few weeks.

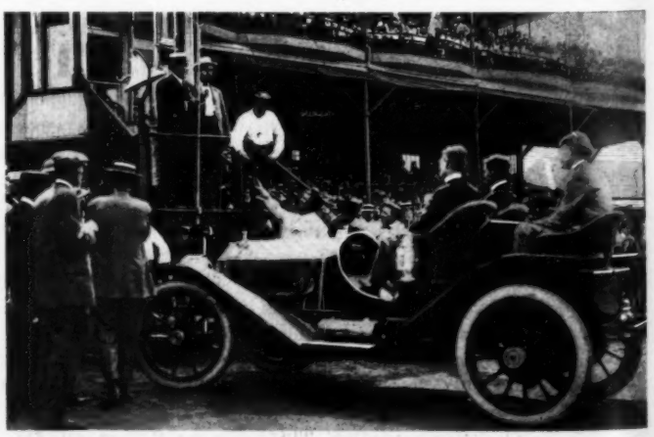
SUGGESTS TIRE PUBLICITY AGREEMENT

AKRON, O., Aug. 23—Anent the varied announcements concerning tire performance in the Glidden tour is a suggestion that hereafter the different makers unite on an agreed statement of facts before submitting their respective claims to the public. "We are willing to do that very thing," says W. B. Miller, secretary of the Diamond Rubber Company, "but we would want experienced tire men to keep the record and act as arbiters. We had on the tour this year four men who know all kinds of tires and tire mishaps intimately, and the result of their joint observations and inspections is supported by their affidavits; but another concern can come along with a different story, and there you are. Perhaps the public doesn't care, particularly. Such things work out right in the end somehow, and nowhere more than in the automobile business. In no line of activity does the public more quickly bury false notions or so unerringly pick only the real gold from the unending glitter put forward."

INCREASING USE OF DEMOUNTABLE RIMS

AKRON, O., Aug. 23—That fully one-third of next year's touring cars will be equipped with demountable rims is the prediction of H. S. Firestone in the latest news from large tire companies. The improved features of the 1910 demountables are of pertinent interest, and Mr. Firestone's contention is of special importance.

"The growth in popularity of these rims of late has been little short of phenomenal," says Mr. Firestone. "Three years ago they were known only to a few racing men; to-day thousands of private car owners have them. The improved features that appear in the latest rims permit their use with any standard type or make of tire, which means that no matter what may be the favorite tire chosen, the motorist can now enjoy the freedom from annoyance and delay which demountable rims offer."



Kentucky's Governor Honors the Glidden Lexington

The photograph shows Governor Wilson, at the State Fair Grounds, presenting the Lexington crew, which made such a fine showing in the recent Glidden Tour, with a gold watch to Driver Moore, and remembrances to Mechanic Blackburn and to Observer Dodge, all donated by the Lexington Motor Car Company, in appreciation of their services.

Banquet of the Stoddard-Dayton Agents, Held at Hotel Denison, Indianapolis, August 20, During Annual Convention

STODDARD-DAYTON AGENTS AND EMPLOYEES FACTORY GUESTS

INDIANAPOLIS, Aug. 21—Stoddard-Dayton is a name that has become exceedingly well known in this city during the past few days in connection with the opening of the motor speedway. Not only because of the large participation of cars of this make was this so, but also because of the convention of the agents of the Dayton Motor Car Company, and of the excursion of the entire factory force to this city to-day. Then, too, none of the vast crowd which went out to the races could help seeing the special convention tent erected for the meetings, and at times the public became so insistent that the special exhibtion of 1910 Stoddard-Daytons had to be opened to them.

Inasmuch as the annual meeting of the factory representatives, to discuss the prospects for the coming season, was about due, the scene of action was shifted from Dayton to this city. The agents began to arrive on Wednesday and Thursday, and stayed throughout the race meet, with all their expenses paid by the Ohio firm. To cap the climax the entire factory force was brought here to-day in a special train of 17 cars. A corps of waiters and a chef were in attendance throughout the meet to serve lunches in the three private Stoddard-Dayton grandstands.

The exhibition tent was an attraction in itself, for it was very large, and decorated to resemble an Italian pergola, covered with growing vines and flowers, with bey trees and junipers to carry out the effect. The result was that the whole appeared as substantially built as if intended to be permanent. Fifteen of the new models were grouped around the outer oval, giving ample space in the center for the morning sessions, and the exhibit was intended to be comparatively private. The crowds, however, were evidently so desirous of seeing the machines that they were allowed to inspect them. There was every style of automobile there, including roadsters, runabouts, baby tonneau, regular touring cars, a speed car and enclosed models of limousines, landaulets and coupes. The latter type attracted a great deal of attention, for the upholstering and details were elaborate and the whipcord, leather and broadcloth were used to their best advantage. A limousine of the 30-horsepower chassis was of particular interest, as was also an inside-driven coupe, which has its steering wheel, gear and brake levers so arranged that entrance can be made from either side with ease.

Two banquets were the features of Thursday and Friday evenings, on the former occasion the agents gathering around tables grouped in the shape of a U, and last night the letter S was similarly described. The autophone, an orchestra, and a military band took turns at furnishing the music.

The agents who attended were the following: Whitney and Ferris, Boston; Cramer, Buffalo; Babcock and Tillotson, Chicago; Church, Los Angeles; Hershede, Cincinnati; Moore, Cleveland; Jekins, Columbia; Roberts, Columbus; Dodds, Dayton; Barnett, Denver; Sears, Des Moines; Neumann, Detroit; Burington, Holyoke; McGee, Kansas City; Ward, Lexington; Longest, Louisville; Burmeister and Kelly, Minneapolis; Hartwell, Mobile; McShane, Newark; Wheeler and Westerfell, New Haven; Newton, Whiting, Percy and Warren, New York; Berren and Hamilton, Philadelphia; Fetill, Omaha; Moore and Jackson, Pittsburgh; Ziebrich, Rochester; Thompson, Salisbury; Holligan, Savannah; Thompson, Thomasville; Atwood, Toledo; Smith and Bonvier, Toronto; Lucey, Troy; Tool and Decker, Utica; Ide, Syracuse; Halff, San Antonio; Shellenberger, Wichita; Shoemaker, Elmira; Cox, Harrisburg; Schaab, Baltimore; Dorsett, Washington; Wallace and Dewitt, Chattanooga; Garret, Wilmington; Leavitt and Plughoff, San Francisco; Sherman, Salt Lake City.

CHANGES IN CLEVELAND WHITE BRANCH

CLEVELAND, Aug. 23—Several changes took place to-day in the Ohio retail department and local branch of the White Company, following the resignation of its manager, Hobart M. Adams. Frank E. Stiverson has been appointed to the position, and at the same time retains his former capacity as sales agent for this city and the State. Concurrent with this is the announcement by the factory officials of the consolidation of the repair and stock departments of the local branch and of the factory. Some confusion has been caused by White owners out of this territory getting in touch with the retail end of the business instead of the wholesale at the factory. H. N. Searles, who drove the kerosene-burning White steamer in the Glidden tour, will be in charge of the enlarged department and will be in direct touch with all owners and agencies from any locality. The changes in this city in regard to the Ohio territory do not directly affect the White representatives at Cincinnati, Toledo and Columbus.

The White plant is now working upon the 1910 product and shipments of the kerosene cars have been going on for some time, in quantities which promise one of the greatest seasons in the history of the concern.

Progress on Duplicate Addition to Chalmers-Detroit Factory, Detroit

Bowser Company Adds to Factory—Growth of the automobile industry has necessitated the addition from time to time of factory space at the plant of S. F. Bowser & Company, Fort Wayne, Ind., but none of the magnitude of the new building now under way. Up to the first of this year the Fort Wayne factory had 65,000 square feet of floor space, and the new structure will just double this. Work is progressing rapidly on it, and a contract has just been let for the installation of a 320-horsepower gas engine with a gas producer plant. The entire factory is working to the limit to supply gasoline and lubricating oil storage outfits for the automobile trade, in addition to that for the general demand. It also manufactures tanks, pumps and similar devices, as it was doing for fifteen years prior to the introduction of the automobile business.

Diamonds in Tire Mileage Record—A tire mileage record that many motorists will envy was made by G. W. Butler, who won first prize, $1,000, in the "lowest upkeep" contest conducted by one of the large automobile manufacturers. Mr. Butler is a chauffeur in the employ of J. E. Clenny, of Chicago, and his daily records were duly sworn to. The Diamond make of tires was used and in 17,003 miles covered gave an average of 11,289½ miles each, counting only the tires fully used up, or an average of 9,045 miles, including tires in use when the contest closed. A hint to automobile owners is found in Mr. Butler's system, by which when a rear tire had run 3,500 to 4,500 miles it was changed to the front, so that the newest tires were always on the rear.

Fine Building for Wintons in Seattle—What is claimed will be the finest automobile establishment on the Pacific Coast is being planned by the Winton Motor Carriage Company for Seattle. This will be erected at Pike street and Terry avenue, of steel and concrete construction, with a frontage of 80 feet and a depth of 120. It will have six stories, two below the street level and four above. The contracts have been let and the building will be ready for occupancy on January 1 next. The entire structure will be used by the Winton interests, for the rapidly increasing business in that city and the Northwest has far outgrown the present big quarters at 715 East Pine street.

Rushing Stearns Factory Addition—Under a forfeit of $100 a day, work is now being rushed on the new four-story brick and concrete addition to the F. B. Stearns factory in Cleveland, O. Under terms of the contract, machinery in the new building must be in running order by September 15. For the past year the Stearns factory has been badly cramped because of lack of room, the machine and forge shops being particularly hard pressed. The new addition, 120 by 180 feet, will materially aid the production department and provide for much quicker delivery.

An Ajax Transcontinental Record—In publicity matter issued by the Ajax-Grieb Rubber Company is the interesting tire report of the trip made by Mrs. Alice R. Ramsay across the continent in her Maxwell car. It is stated that three of the Ajax casing ran the entire 4,200 miles with the original New York air in them, and that but one puncture necessitated a change of the fourth, after several thousand miles had been covered. This is in line with the guarantee given by the Ajax company for 5,000 miles of running or 200 days of service with its tires.

Carriage Company to Specialize in Auto Bodies—The Carriage Woodwork Company, of Hamilton, O., has announced its intention of making a special feature of its work in automobile bodies. It has engaged William Cheetham, formerly of Detroit, to take charge of the construction department and to turn out both wood and aluminum bodies. Mr. Cheetham has had large experience in this line, having just finished a contract in Pontiac, Mich. He is a graduate of the Kensington School of Fine Arts of London.

Firestone Tires on Oldfield's Record-Breaker—At the Indianapolis Motor Speedway two of the fastest records set for an American special track were those which Barney Oldfield made for the mile and kilometer. On his car he used Firestone tires and set the mile record at 43.1 seconds, as against the 48.2, held by Jay on a regular track. The kilometer record for an American circular course is a new one, 26.2 seconds, a rate of 85.5 miles per hour. The Firestone Company is justifiably proud that its tires were used in such a meet on the big car.

Testing New P. & S. Motors—Experimental work and thorough tests of the new Palmer & Singer motors are now being carried out. Two new types of motors will be added to the already ample line of six and four-cylinder machines, and the preliminary work was held under the direction of Engineer David Landau. Mr. Landau states that one of the new engines will be able to furnish a speed of ninety miles per hour, and that the other type will have marvelous hill-climbing ability.

Bosch Gets Largest Magneto Order—The Bosch Magneto Co., of New York, announces that it has secured the order for equipment of Bosch magnetos on all Indian motor cycles for 1910. The Hendee Manufacturing Co., builders of this machine, has adopted the Bosch for its output next season, and the Bosch company states that the order exceeds by several thousand any similar one on record.

Addition to Parts Company Plant—The Illinois Automobile and Parts Company in Peoria, Ill., has had work started upon a $6,000 addition to its factory that will double its present capacity.

PERSONAL TRADE MENTION

Fred J. Titus has joined the sales force of the Palmer & Singer Manufacturing Company as assistant sales manager in charge of the out-of-town territory. He will begin his new duties on September 1. Mr. Titus is one of the best-known figures in the automobile trade and until recently had been connected with the Harry S. Houpt Company, leaving to enter the agency field in Newark, N. J.

O. L. Weaver, of Cincinnati, has resigned as manager of the branch of the Goodyear Tire & Rubber Company in that city and will locate in Cleveland as factory sales agent for Overland automobiles in eastern Ohio, western Pennsylvania and West Virginia. In severing his connection with the Goodyear Company he broke a service of ten years, six of which he had spent as manager of the Cincinnati branch.

Will S. Gilbert is now the automobile editor of the Cleveland *Plain Dealer,* succeeding Henry H. Hower, who has joined the Stearns forces. Mr. Gilbert was connected for many years with the Cleveland *Leader,* and is one of the veteran automobile writers. He covered the Glidden tour this year for the *Plain Dealer.*

A. K. Brown, of the Hoyt Electrical Instrument Works, Penacook, N. H., has been given charge of the Boston branch, 161 Summer street. He has been connected with the makers of the Hoyt instruments for a considerable time, thus being well equipped for his new position.

E. W. Carter, of the Hoyt Electrical Instrument Works, will hereafter be connected with the factory at Penacook, N. H. Mr. Carter has been in charge of the Boston office.

CHANGES IN THE BOSTON TRADE

Boston, Aug. 21—The crop of changes in the Boston automobile trade that comes every year about the time of the appearance of the new models has arrived, and recently there have been a number of shifts of interest. Prominent among them is the establishment of a branch house by the Thomas company. It is called the Thomas Motor Branch Co., and is in charge of Charles S. Henshaw who, several years ago, was the Thomas agent here. Just now the branch is located in upper Columbus avenue, but negotiations are in progress for a site in the Back Bay. For the past year or more the Thomas agency has been held by the Whitten-Gilmore Co., who now have the Chalmers and the Hudson agencies.

Another shift in local representation is the passing of the Algonquin Motor Car Co., agent for the Oldsmobile, and the organization of the Olds-Oakland Co. as selling agent for the Oldsmobile and the Oakland, two General Motors cars. The new concern has taken the Algonquin Motor Car Co.'s lease of the salesroom on Massachusetts avenue. On Boylston a new arrival is the Stevens Sowers Motor Car Co., which has the agency for the Jackson and the Fuller cars. The Selden Motor Car Co., of Massachusetts, is just opening a new store at 801 Boylston street, and the Continental Caoutchouc Co., heretofore represented by an agent, has a branch store about ready for business on Boylston street. The Panhard & Levassor branch, formerly on Massachusetts avenue, has moved to Dartmouth street, taking the quarters formerly occupied by the Goodyear Co. The Velie agency at 21 Hawkins street, formerly the Kilbourne-Corlew Co., has become the Corlew-Coughlin Co.

Two important real estate transactions marking the inroads that motor vehicles have made on the public carriage business were consummated lately. One of these was the sale of the large modern stable at Massachusetts avenue and Newbury street, formerly occupied by Kenny & Clark, livery and cab men, to F. J. Tyler, of the Maxwell-Briscoe Boston company. It is understood that Mr. Tyler will make the necessary alterations and soon the Maxwell-Briscoe sales, shop and garage headquarters will be established in the Kenny & Clark building. It is well located near Commonwealth avenue and the parks, most convenient for garage purposes and most conspicuous for sales.

Not far from the Kenny & Clark building on Massachusetts avenue is the large stable of the Boston Cab Co., which, by an arrangement made recently, is to be converted into a garage and headquarters for the Taxi Service Co.

Other changes in the local trade, including the placing of some new agencies, are said to be pending.

RECENT BUSINESS CHANGES

Lucia Brothers Change Firm Name—The Lucia Brothers Motor Car Company is the new name adopted by Albert J. Lucia and Howard E. Lucia, of Green Bay, Wis. Up to this time the Lucia Cycle Company was the firm title, but inasmuch as the automobile business is taking the entire attention the old name has been abandoned. The concern was started in 1888 with bicycles, and in 1900 automobiles were first taken up. A well-equipped garage and repair shop is maintained in Oconto, in addition to the headquarters in Green Bay.

Boston Taxicabs Companies Combine—The Taxi Service Company and the Boston Cab Company have arranged to work together, the former having purchased a substantial interest in the latter. For the present they will be operated separately, but without conflicts, and will later be merged. A. E. Morrison will continue as manager of the Taxi company.

TAXICAB AND TRANSIT

Dixon Springs, Tenn.—An automobile line has been established between Dixon Springs and Gallatin, a distance of 23 miles. At present but one car is being used, making the outbound trip in the morning and returning in the afternoon, connecting with trains to Nashville. If traffic requires it, another machine will be put into the service.

IN AND ABOUT THE AGENCIES

Baker, Chicago—The Baker Electric Vehicle Agency has leased for a term of ten years the property on Michigan avenue, 100 feet south of Twenty-third street. A building will be started at once, with the provision that it must be ready for occupancy on May 1, 1910.

Franklin, Pittsburgh—W. F. Reynolds, who was recently appointed manager of the new Franklin branch, has secured quarters at 5926 Baum street and will take possession on September 1.

NEW AGENCIES ESTABLISHED

Rambler and Regal: Charlotte, N. C.—Carolina Automobile Company, South Church street, E. A. Robbins, manager. Distributors for North and South Carolina.

Chalmers-Detroit, Hudson, Hupmobile: Natrona, Pa.—Plumer Eaton and Howard Humes, Second avenue.

American Simplex and Overland: Kansas City, Mo.—Louis J. Long and Clifford Histed, 1527 Grand avenue.

Jackson and Fuller: Boston—Stevens-Sowers Motor Car Company, 821 Boylston street.

Reo and Premier: Atlanta, Ga.—J. E. Levi & Co., 222-224 Peachtree street.

Peerless: Donaldsonville, Ga.—Louis A. Maurin.

Hudson: Trenton, N. J.—Harry B. Salter.

RECENT INCORPORATIONS

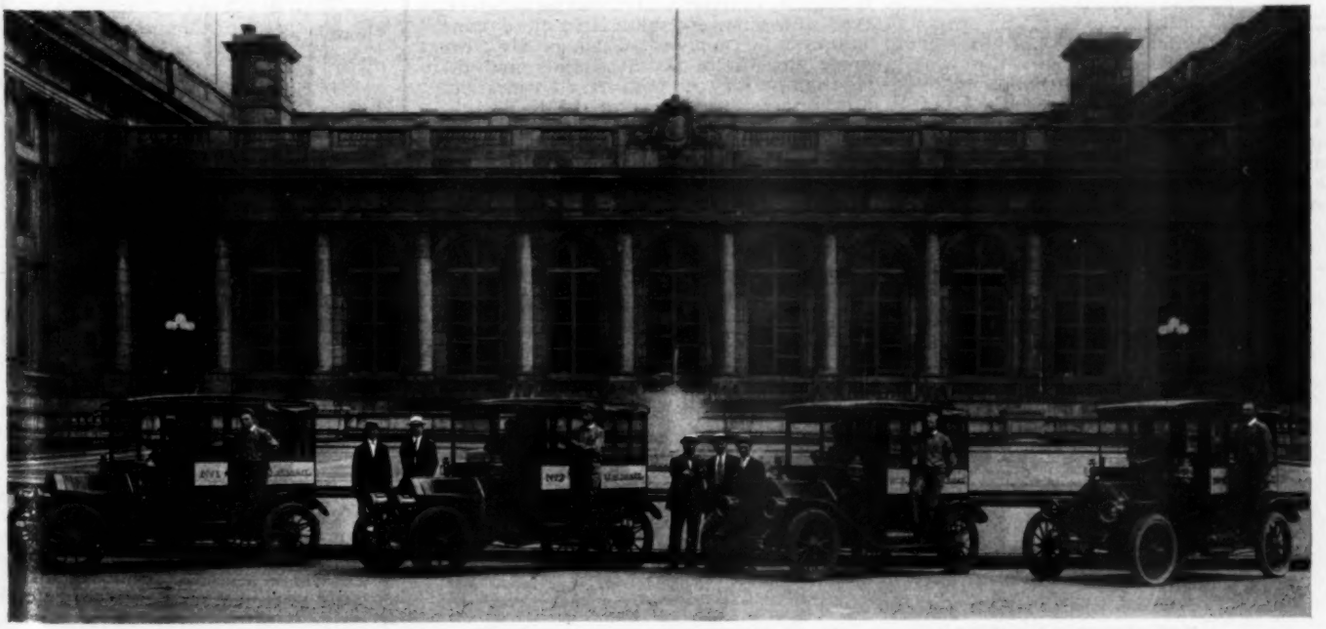
New Jersey Carbureter Company, Jersey City—Capital $25,000. To manufacture steel, iron, malleable iron, wood, and other carbureters, appliances, etc. Incorporators: Charles R. Nutter, F. L. Houghtaling, Charles F. Zissel, Jr.

Chicago Automobile Self-Starting Appliance Company, Chicago—Capital $70,000. To manufacture and deal in automobiles and accessories. Incorporators: C. E. Crane, Harry Hobbs, Charles Conlon.

C. A. Coey Automobile Service Company, Chicago, Ill.—Capital $200,000. To conduct an automobile livery and garage service. Incorporators: C. A. Coey, C. E. Gregory, D. Henderson.

Harry S. Houpt Manufacturing Company, New York—Capital $600,000. To manufacture automobiles, motor boats, and aerial machines. Incorporators: H. S. Houpt, M. K. Harris, G. Cheney.

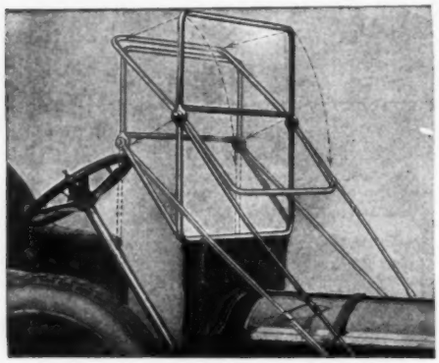
Parker Motor Company, Hartford, Conn.—Capital $50,000. To manufacture automobile engines, etc. Incorporators: Lucius F. Robinson, Albion B. Wilson, Francis W. Cole.



Group of Overland Automobiles in the Government Mail Service at Indianapolis, Taken in Front of the Postoffice

Information for Auto Users

The Friction Folding Wind Shield—This shield, of the centrally-hinged type, is capable of a great variety of positions, all of which are obtained without manipulating a single spring or thumb-nut, and with the use of but one hand. It is easily within reach of the driver when wanted, and may be quickly folded out of the way when not in use. No adjustments are necessary. The frame is made of



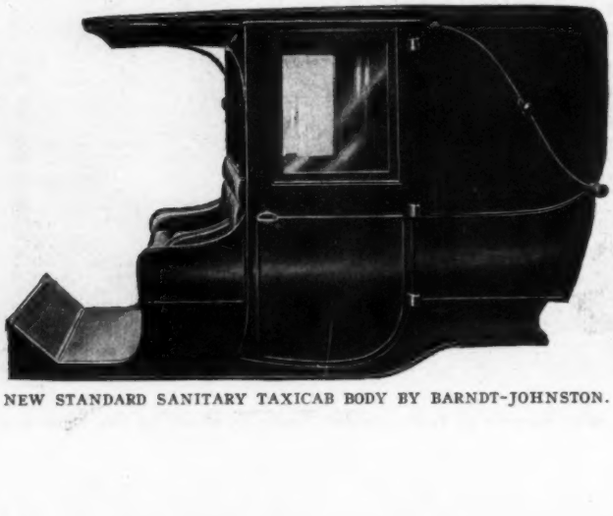
CENTRALLY HINGED TYPE OF WIND SHIEID

seamless brass tubing, with a sub-channel to hold the glass firm and prevent rattling. There are no sharp edges or corners to catch the dirt, so that it may be easily polished and kept clean. Its normal position for country driving is with the upper part folded down to the front at an angle of about 45 degrees below horizontal; this position greatly reduces the wind resistance, and the air currents are deflected over the driver's head. At the same time the glass does not interfere with his vision. The maker is the Newark Rivet Works, of Newark, N. J.

Barndt-Johnston Taxicab Body—The Barndt-Johnston Auto Supply Company, of Columbus, O., is furnishing various manufacturers with a new standard taxicab body, which embodies a number of up-to-date ideas. The body is made as sanitary as possible by the use of the skeleton type top and the substitution of linoleum for carpet as the floor covering. The framework of the body is of white ash, and the panels of sheet steel coated with aluminum. The rear portion is extremely large and roomy and will accommodate five passengers comfortably.

K-W Ignition and Lighting—To its line of magnetos and coils the K-W Ignition Company, of Cleveland, has added electric headlights and side lamps, intended to be operated by the current from one of their ignition magnetos. The lighting system is connected directly to the magneto, which may or may not be used for ignition purposes as well. Ignition requires about 25 per cent. of the current output of the magneto, consequently reducing to some extent the available amount of illumination; but even in this case it is claimed that the light is more powerful than that obtained from an acetylene system. When the motor is stopped the lighting, of course, stops too; but a storage battery is provided to supply current for the side and tail lamps, if required. The total battery consumption of these is about 3-4 ampere hours. The light also varies in intensity with the speed of the car, up to about thirty miles an hour, above which it remains constant. No matter how slow the car goes, however, there is always light enough to meet all requirements. There is no danger of burning out the lights at any speed; the regulation is automatic without governors or any other trappy devices.

The K-W line of electric lamps includes automobile headlights, side and tail lamps, speedometer lamps, dome and bracket lamps for closed cars, and searchlights and side lights for motorboats. The headlights are fitted with parabolic reflectors of brass, silver-plated, in which the electric bulbs are accurately focussed. The bulbs are of the tungsten type and very economical in their consumption of current. Fittings are also made by which gas headlights and oil side lamps may be converted to electric. One interesting feature of the K-W system is that if more light is required for a few seconds to make out some distant object, the clutch may be slipped momentarily, allowing the engine to speed up and doubling the illumination.



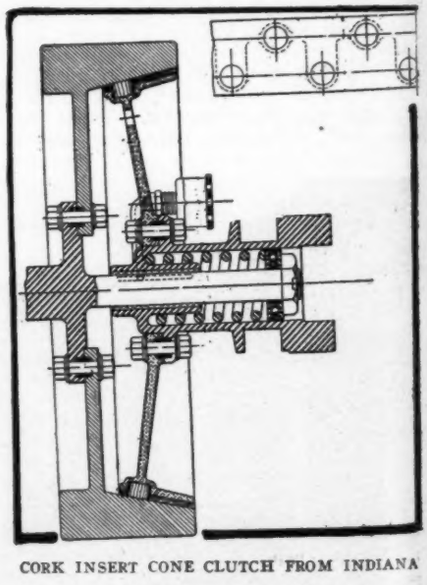
NEW STANDARD SANITARY TAXICAB BODY BY BARNDT-JOHNSTON.

New Four-Tone Horn—That prolific inventor, C. H. Foster, of the Gabriel Horn Mfg. Co., Cleveland, has just brought out another clever little appliance for the automobile, which is destined to be just as popular as his previous devices are. This is a very small, compact horn of four tones, suitable for playing bugle calls and similar simple tunes, through

NEW GABRIEL HORN IN PLACE ON CAR

the medium of the exhaust gases. It is operated by a keyboard comprising four keys, each controlling one note, and the whole located on the side of the seat, convenient to the driver's right hand. In addition, a foot pedal, when pressed, sounds all four notes at once, this serving as a warning signal. While any location is possible, the usual place is that shown in the cut above, on the front running board, just back of the front fenders.

General Cone Clutch—A revival of the interest in cone clutches, which has been so noticeable in connection with the most recent car production, is accounted for in a wide measure when notice is

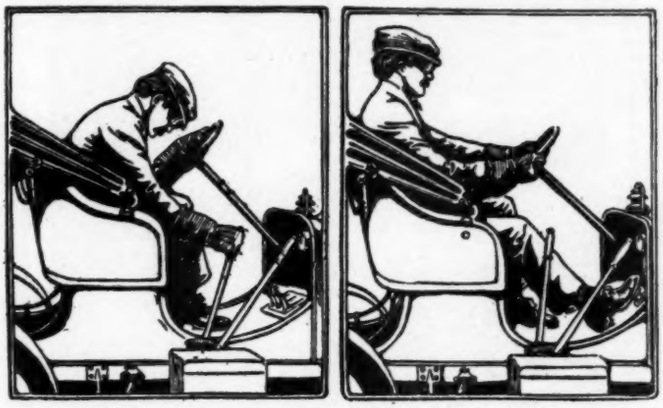


CORK INSERT CONE CLUTCH FROM INDIANA

taken of the line of cone clutches that are to be had from the General Manufacturing Company, of Elkhart, Ind. Of the several sizes and models of cone clutches which this company is furnishing to makers of cars in large quantities, the type F size, rated at 30-35 horsepower, is here illustrated and, as will be observed, it is leather-faced with "cork inserts" and up to the standard established by the National Brake and Clutch

Company, originators of "cork inserts." In addition to the cork, with a view to bringing the leather to a good bearing springs are placed at equal distances around the periphery, under the leather, so that the leather is pressed out evenly against the female member of the clutch. The General Manufacturing Company is manufacturing a full line of these clutches, in addition to transmission gear sets of the latest and most approved types for use in 1910 cars.

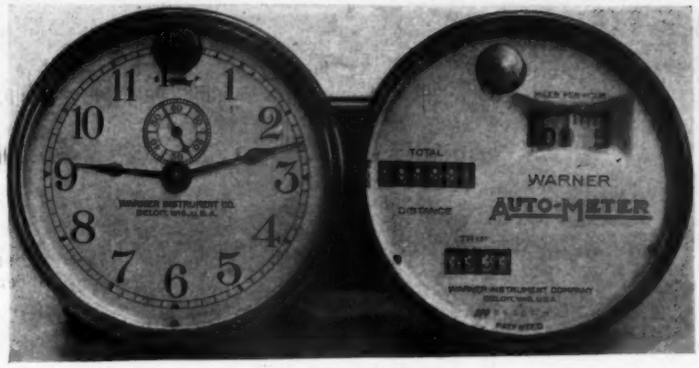
F-B Automatic Clutch Release—All owners of the Buick Model 10 will be interested in a device brought out by the F-B Company, of Columbia, S. C., known as the F-B automatic clutch release. Its purpose is to enable the driver to release his high-speed clutch without stooping over to reach the lever. This is accomplished by interconnecting the service brake with the clutch, so that when the brake is applied the clutch is released, and when the brake is taken off the clutch automatically engages again. The result is the same as if the car were fitted with a sliding gear and master clutch. The device has been on the market for some time, and many letters of commendation have been received.



METHOD OF OPERATION OF F-B AUTOMATIC CLUTCH RELEASE DEVICE.

As the two cuts show, the old way of releasing the clutch was an awkward one, resulting in a cramped position and the loss of much time in reaching for the lever. This device does away with all that, allows better control, a clear view ahead and eliminates the stooping forward action.

One New Idea from Cincinnati—This southern Ohio city has gone into the motoring field with a new accessory especially designed for automobiles. This is a dry battery, known as the Sparker, and its manufacturers, the Rock Island Battery Company, Cincinnati, are exploiting it as an extra special ignition dry cell, and the highest priced cell on the market as well. This battery differs from others in that Japan is the source of the manganese ore used, instead of Russia. Other points of difference are the high voltage and comparatively high amperage peculiar to the cells. It is a hand-made cell and the result of three years of experimentation and successful use. Made in every size for which there is a demand, the most popular 2½ by 6 size, known as No. 6, retails at 35 cents. Other larger sizes are priced in proportion. The well-sustained electromotive force makes it worth every cent of its cost, high as it is.



WARNER'S NEW TWINS AS THEY APPEAR FACE TO FACE

Separate Department for Automobiles—One of the largest of the many large metropolitan supply houses, that of the New York Sporting Goods Company, 15 Warren street, has had its automobile supply department expand to such an extent that the necessity arose for segregation. So it is that the basement and first floor have been given up to supplying motorists' wants. Chains, oils, batteries and other heavy goods of a similar nature will be located in the basement, and above them, on the first floor, will be found clothing lamps, horns and the smaller parts. Located just one door from Broadway, in the heart of the downtown district, this store will be found very convenient.

Warner Autometer "Twins"—No mechanical change has been made in the 1910 Warner Autometer, but a new combination autometer and clock has been brought out, called "The Twins," very attractive in appearance. As may be seen from the illustration, the clock and the speedometer-odometer device are each in a cylindrical case exactly similar in size and shape, thus giving the instrument an appearance of symmetry very pleasing to the eye. The dials are illuminated from the interior, the light being thrown directly on their backs, and so arranged that it does not interfere with the vision of the driver. As most autoists know, the Warner Autometer, which is made by the Warner Instrument Company, of Beloit, Wis., is built on the magnetic induction principle. Chronometer construction is followed, the moving parts running on sapphire jewels and balls. The driving shaft is designed to turn at one-fourth the usual speed, that is, at 680 revolutions to the mile, thus giving it long life and eliminating noise and vibration. The odometer is built with the same care; its trip and season dials register up to 1,000 and 100,000 miles, respectively.

With improved roads, automobile speeds are gradually increasing, and this device will meet with a wide range of usefulness among the motorists who think, in the words of a Warner competitor, "it's nice to know how far you go," the modern version being "it's nicer to know how fast you go." The new twins allow for the first time the record of time, distance and speed at one and the same time.

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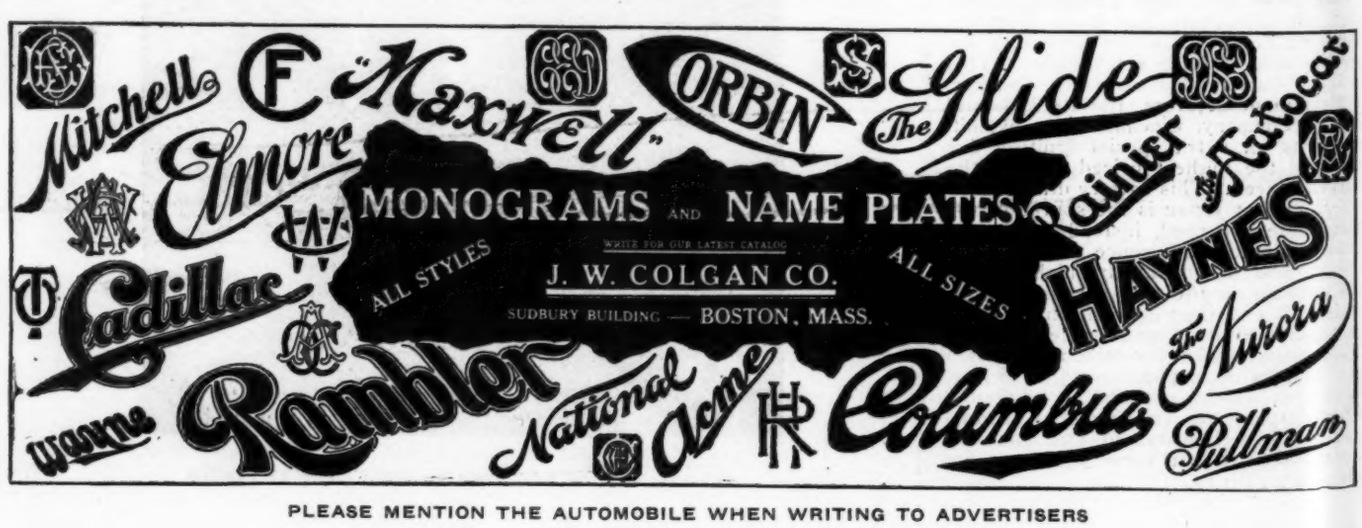
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